Vol. III JANUARY No. 1

1914

CHEM. LIB.
1914

The Journal of the American Pharmaceutical Association

PUBLISHED MONTHLY
BY THE ASSOCIATION
AT COLUMBUS OHIO

W. J. N.

THE STONEMAN PRESS

62nd ANNUAL CONVENTION, AUGUST 24-29, DETROIT, 1914

Specify MERCK'S

"ORIGINAL PACKAGES"

Contents for January, 1914

EDITORIAL:
More About the Harrison Bill, 1—The Editor's Reply to Mr. Freericks, 4—Brighter Prospects for Price Protection, 8—Present Status of the Hughes-Bacon Bill..... 12

SCIENTIFIC SECTION:
The Pharmacognosy Museum, 17—The Analysis of Vanilla Extract, 25—Oregon Balsam, 28—How Much Should Compressed Tablets Vary in Weight? 31—Conila Mariana, A Substitute for Spigelia, 33—The Commercial Possibilities in Growing Medicinal Plants, 34—Bibliography of the Deterioration of Drugs and Pharmaceutical Products..... 38

SECTION ON PHARMACOPOEIAS AND FORMULARIES:
Volumetric Method for the Estimation of Mercury in Certain Compounds and Preparations, 50—A Pharmacopoeia for the Physician and Dispensing Druggist..... 51

SECTION ON EDUCATION AND LEGISLATION:
Pharmacy Laws, Proposed, Enacted or Amended During 1912-1913, 55—The Evil of Trade-Marked Medicinal Compounds..... 67

SECTION ON PRACTICAL PHARMACY AND DISPENSING:
The Making of Tablets by the Retail Druggist..... 72

SECTION ON HISTORICAL PHARMACY:
Report of the Historian, 76—Centenary of Men Famous in Pharmacy 80

CONTRIBUTED AND SELECTED:
Relations of the Proprietary Manufacturer to the Retail Druggist and Price Maintenance, 85 — Buying Chemicals from Peddlers, 89—Study of Spirit of Camphor, 91—Slow Effect of Added Water, 91—A Modified Wright's Stain, 92—Deterioration of Nitroglycerin Tablets, 96—Possibility of Increasing Alkaloidal Content of Belladonna Through Selection, 98—Sensitized Vaccines..... 100

PAPERS READ BEFORE LOCAL BRANCHES:
The Cultivation of Medicinal Plants in America, 114—Window Dressing, 122—Pharmaceutical Advertising, 125—Conservation in Relation to Pharmaceutical Chemistry..... 129

EDITORIAL NOTES:
Greeting from Honorary President Lyons, 136—The President-elect, 136—The New President of the N. W. D. A..... 138

OF GENERAL INTEREST:
The National Wholesale Druggists' Association..... 139

PROCEEDINGS OF THE LOCAL BRANCHES:
City of Washington Branch—Oct., Nov. and Dec. Meetings, 142—New York Branch—Nov. Meeting, 149—Chicago Branch—Dec. Meeting, 151—Nashville Branch, Dec. Meeting, 152 — Pittsburgh Branch — Dec. Meeting, 152—St. Louis Branch—Dec. Meeting..... 154

THE PHARMACIST AND THE LAW:
Abstract of Legal Decisions, 154—Notices of Judgment—Federal.... 157

COUNCIL BUSINESS:
Council Letters Nos. 6 and 7..... 157

U. S. PUBLIC HEALTH SERVICE..... 159
CHANGES OF ADDRESS..... 159
OFFICIAL ROSTER.....ix-xvii

CHEMICALS
ALKALOIDS
SPECIALTIES
—
SPECIFY

ROCHE

PANTOPON
DIGALEN
THIOCOL
—
ON ORDERS

The Journal of the American Pharmaceutical Association

Volume III **JANUARY, 1914** **No 1**

Office of Publication, 79-89 North Third St., Columbus, Ohio.

Subscription, $4.00 per annum, within the United States. To Canada, $4.35. To other foreign countries in Postal Union, $4.50 per annum.

Entered at the Postoffice at Columbus, Ohio, as Second-Class matter.

MORE ABOUT THE HARRISON BILL.*

IN the December number of the JOURNAL, Editor Beal, in his customary interesting and lucid manner, discusses some of the objections made to the present so-called Harrison Bill. If there be any one thing which I regret in this connection, it is my inability to share the views of Dr. Beal on this oft discussed measure. In aid of a clear understanding of these comments, it is suggested that they be read together with the editorial.

First: It will hardly do to say that the National Drug Trade Conference in its draft of the Harrison Bill sought only the means to trace habit-forming drugs to the hands of the distributor, and to avoid interference with the police powers of the several states. The bill as drafted would supervise and control every grain of the narcotics as distributed to consumers by retail druggists, other than preparations containing minimum quantities. To say that the Harrison Bill does not undertake to regulate distribution to the consumer, in the face of a provision under which pharmacists may sell only on physicians' prescriptions, and are required to keep such prescriptions for a term of years, always subject to the control and inspection of Government officials, cannot well be. There are a number of other instances in which the bill would aim at police regulation without showing any connection with the taxing or inter-state commerce power of the Federal Government. The most curious part of it all is, however, found in the fact that the Conference deemed it necessary to ignore its own expressed intent when it came to consider distribution by the retail druggist.

Second: To contend that physicians are not required to register under the bill if they merely prescribe, is hardly correct, for Section II of the bill provides that the pharmacist may fill the prescription *only of physicians who are regis-*

*A reply to "Some Objections to the Harrison Bill" on p. 1498 of the December Journal.

tered under the Act. It will not serve the physician much to have the right to prescribe without being registered, if no one may lawfully fill his prescription. The point, however, is that a physician who does not assume the functions of a pharmacist, and who himself uses the narcotics only for administration by him in cases of emergency, should not be put upon the plane with the dispensing doctor.

Third: It is my opinion that those who have been advocating Federal regulation of the traffic in narcotics, have had in mind largely the inefficiency of the state laws, and the inefficiency of their enforcement. It is, therefore, aside of the question to say, that if state laws are inefficient, or if local authorities are lax in their enforcement, that then the interest of the Harrison Bill will be largely nullified. Those who have advocated proper Federal legislation, have sought something which would be effective in spite of the inefficient state laws, and the lax enforcement by local authorities.

Fourth: Of course, it is no hardship to require the pharmacist to preserve his prescriptions. This is not the point. The pharmacist is required to preserve them *as a record, and must keep them open for inspection and supervision.* If such a requirement for record, inspection and supervison is deemed essential from the pharmacist, then, why is it not essential for the man who as a dispensing physician assumes the function of a pharmacist? There can be only one sound reason advanced for the differentiation, and this would have to be based on the claim that the wrong doers are all in the ranks of pharmacy, and not in the ranks of the dispensing physician.

Fifth: It is difficult to understand why it would be unjust to require the dispensing physican to write a prescription for the narcotics which he would dispense, and then to keep such prescription as a record open for inspection and supervision, just as the pharmacist is required to do. If the dispensing physician assumes to act in a dual capacity, why should he not be required to comply with the requirements which are incident to each of said capacities? Of course, if the dispensing physican does not know how to write a prescription, it may be a little hard on him, but then, in the cause of humanity, it is high time that he learn. Incidentally, he might then learn to write other prescriptions. The requirement is not intended to be that some third person write the prescription for the dispensing physician. He is to write it himself, and thus establish the written record for inspection, just as the pharmacist is required to do.

Sixth: While it is true that inequality in the operation of the laws between the pharmacist and the physican gives some ground for questioning the constitutionality, this is not at all the only reason advanced. The important grounds upon which the constitutionality of the Harrison Bill is questioned are

(a) That it discriminates between those who are required to pay the same tax. A manufacturer and a wholesaler, who pay the tax and who are not pharmacists (created by state law) may not sell to the consumer, while the pharmacist may sell to the consumer and act also as a manufacturer and sell at wholesale. That the pharmacist is permitted to do this, is of itself no cause for complaint on the part of the writer, but under the law it produces such inequality and discrimination as to seriously affect the constitutionality of the bill. This

is said with full knowledge, that uniformity as specifically required by the Federal Constitution, has been decided to mean geographical uniformity, but aside from this, it is the first essential of every act to give the same rights to those who are required to pay the tax.

(b) Sub-Section (a) and (b) of Section II, are purely an exercise of the police power, without showing any connection whatever with either the taxing power or the interstate commerce power. If these provisions are not shown to be an incident to either the taxing power of the interstate commerce power of the Federal Government, then the Government has no authority to enact them.

If these two Sub-Sections are held unconstiutional, they do not merely affect some minor provisions, but do affect the constitutionality of the entire act, and they can be changed, if the dispensing physician is not exempted, to meet constitutional objection.

Seventh: In deciding upon the constitutionality of the Act, the Court could not take into consideration that the druggist has no business to sell habit-forming drugs direct to the general public. It would have to recognize, that in and of itself, such is not properly a concern of the Federal Government. The example sought to be cited of inequality between the druggist who buys a barrel of alcoholic liquor and sells it as such, and the druggist who buys a barrel of alcoholic liquor and uses it to make real medicines, and then sells it, is hardly an analogy. In the one case the druggist sells liquor and in the other he sells medicines. The druggist who sells liquor has exactly the same right as has the druggist who sells medicines, and if he does not sell his barrel of alcoholic liquor as such, then he is not required to pay the retail liquor dealer's tax.

Eighth: It has not become known to me, that any one has advocated that the dispensing phycisian should be required to demand of his patient that he register as a dealer. The thing that has been advocated is, that the dispensing physician make and keep exactly the same kind of a record as the pharmacist is intended to keep. If there be any absurdity in this, it can be found only in the mind of one who would favor the dispensing physician acting as a pharmacist, as against the pharmacist acting as a pharmacist. The question is not with reference to the administration of a dose by the physician to the patient, it is with reference to the physician who would dispense to his patient a quantity of narcotics for subsequent use.

Ninth: To claim that permission to the dispensing physician to distribute narcotics *only in the course of his professional practice*, is a safeguard against the abuse of the privilege is rather farfetched and not borne out by past experience. The latitude which of necessity would need to be given every physician is sufficient to cover most every possible abuse. To say that the danger of a $2000.00 fine, in making use of the order blank to obtain the drugs for any other but a lawful business, would prevent abuse by the physician hardly serves to sustain the point which is sought to be made, for so long as it rests in the discretion of the physician to claim that he has dispensed the drug in the legitimate practice of his profession, it also rests with him to claim that it was a lawful business. To say that, if the exception and discrimination made in the bill in favor of the dispensing physician transfers to him all of the illegitimate traffic

in narcotic drugs, this should be a source of congratulation on the part of the pharmacist, is entirely aside of the point involved. Those who have sincerely and actively been advocating proper Federal regulation, which should include the Drug Trade Conference, have been interested and engaged in this effort for the purpose of securing efficient regulation which would curb the narcotic evil for the common welfare of all, not for the purpose of giving one class of men an opportunity to proudly strike their chests proclaiming that the evil doers are not among them. To the person who is interested in preventing illegitimate traffic in narcotics, it can be but of small satisfaction to know that his effort has succeeded only in transferring part of the traffic from one class entirely to another class. Of course, there is nothing in the bill which would restrict further state legislation. It is, however, the opinion of many, and more than likely the opinion of those who first agitated proper Federal regulation, that state legislation, no matter how thorough and complete, would always fail because of insufficient enforcement by the state authorities.

Tenth: There must be error in the claim, that the phrase "Registered Under This Act" was carried over from several earlier forms of the bill, for the writer has industriously studied such earlier forms of the bill and has not found the phrase *in connection with the subject matter* in which it is found in the present Harrison Bill. To impose upon the pharmacist under a penalty of $2000.00 and five years' imprisonment the duty to know that a prescription which he would fill is written by a physician who is registered as a dealer in narcotics, is certainly going just a little beyond sound reason. That those who are responsible for this provision did not really intend it, must be granted by any fair-minded man, but that it continues to be defended after being pointed out, is to be regretted. It certainly would be far more in keeping with the sound judgment of those who are responsible for it, had they graciously said "It is an error and we will see that it is corrected."

In making these comments it has been my purpose to touch only upon the more important features of the editorial in question. It, however, may not be out of place to say that, I cannot believe that Congress will ever stultify itself by enacting into law that so-called Harrison Bill in its present form. So long as certain special interests seek advantages and exceptions, the difficult problem of securing proper effective and enforceable legislation will not be solved, unless those who are entrusted with the task decide that all shall be treated with equal fairness, and none with special favor. As soon as this can be agreed to, the inherent difficulties will become far less difficult.

FRANK H. FREERICKS.

<□>

THE EDITOR'S REPLY TO MR. FREERICKS.

WHEN the discussion of so technical a matter as is involved in the Harrison Bill is unduly prolonged there is always danger that it may become a mere exercise in verbal dialectics, and what was intended as serious debate degenerate into fruitless quibbling over words and definitions.

While desirous of avoiding responsibility for such a result in the present in-

stance, the Editor feels that circumstances require him to make some reply to the very interesting comments submitted by Mr. Freericks in the preceding paper. For convenience of reference, the several sections of this reply are numbered to correspond to the sections of Mr. Freericks' argument to which they refer.

First. The Harrison Bill does not propose to interfere in the police regulations of a state any further than is necessary to insure the collection of the tax levied. The tax is laid upon the handling of certain drugs by dealers, and having power to levy the tax the Congress has also power to adopt such regulations as will insure its collection from those who should pay it, even though these incidental regulations operate wholly within a state.

The tax is not levied upon the purchase of the drugs for consumption, but upon the business of dealing in such drugs, and dealing in them includes both a purchase and a resale, either to a customer or to a patient.

In order to distinguish between those who are dealers and those who are not, the former are required to register and use an official order blank for their purchases of the drugs. The production of the order blank is legal evidence of their having registered and paid the tax.

The physician's patient, however, is not a dealer and not liable for the payment of any tax, and the bill simply provides that the physician's prescription shall be sufficient evidence to the seller that the drug is intended for consumption and not for resale. The requiring of order blanks and prescriptions is not an interference with the state's police powers, but only the requiring of evidence of certain facts: in the case of the order blank that the dealer has paid the tax; in the case of the prescription that the drug is required for consumption, for which no tax is necessary.

Second. The editorial which Mr. Freericks reviews stated plainly that the practical effect of the Act would be to require all physicians to register as dealers, whether they were of the class commonly known as dispensing physicians or not. As this point was not in controversy it did not seem to the Editor to be necessary to point out all of the reasons why every physician would be compelled to register.

Third. No doubt the advocates of Federal regulation of the traffic in habit-forming drugs had it in mind to supplement state laws and to make their efficient enforcement possible. There is no dispute on this point. It has been the constant claim of those who helped to formulate the Harrison Bill that this was the objective at which they aimed.

To advocate, however, that Federal legislation should be such as will effectually control the traffic irrespective of state laws and their efficient enforcement is to advocate the impossible. To do so would necessitate a far greater interference with the state's exclusive jurisdiction in police affairs than is involved in the most extreme proposition of the Harrison Bill. If the traffic in habit-forming drugs is to be touched at all through Federal law, it must be either through the expressed power of Congress to regulate interstate commerce, or through its power to levy taxes, and its implied power to make these regulations effective, even though they do incidentally affect the police powers of the state.

Fourth. The pharmacist may dispense either on an order blank or on a prescription. The first is preserved as a record to show that the drug was sold to a

dealer who has paid the tax, the second that the sale was to a consumer who is not required to pay the tax. If the physician, acting as a dealer, sells to one not his own proper patient he would have to preserve the same record as the pharmacist.

Fifth. To require that the physician write a prescription for what he dispenses, and then *himself keep the prescription,* as suggested by Mr. Freericks, would be fruitless, if not worse. It would cause the law-abiding physician some additional trouble, and would give the dope dispensing doctor something he would very much like to have, namely, the authority to manufacture evidence at will to cover his nefarious practice. When a physician has so far lost his sense of professional responsibility as to be willing to sell habit-forming drugs to habitues, a little thing like writing a fake prescription is not going to burden his conscience, especially when the law by recognizing his right to do so would make it still more difficult for the state officers to prove that the substance had been improperly dispensed.

He could write a prescription for a grain and deliver an ounce, or any other quantity, and the patient, if a "fiend" or one who is obtaining the drug for surreptitious sale to others, would do anything necessary to keep the doctor out of trouble, and thus preserve his source of supply unimpaired.

If the proposition was that the physician when he dispenses should deliver a prescription to a *third* party, who had the means of knowing that the amount delivered corresponded to the prescription, (as is the case when the pharmacist fills it) then it might prove effective; but such a proposition is not under discussion.

Sixth. To the objection that the law would discriminate between the wholesaler and manufacturer on the one hand and the retailer on the other in that it would require all to pay the tax, while only the latter, (i. e., the pharmacist registered under state law) could dispense on prescription would constitute such an inequality as to make the law invalid, it may be replied that wholesalers and manufacturers, acting as such, do not compound prescriptions for patients.

The bill does not divide dealers into wholesalers, retailers, etc. It classes them all as "dealers," and does not discriminate as to the amounts they may sell or the persons to whom they may sell. That the state law would permit some dealers to fill prescriptions and deny the privilege to some others is an incidental matter with which the Federal law would have nothing to do.

If any dealer, whether wholesaler, retailer, or physician, sells to another dealer, he must have an order blank to show that the purchasing dealer has paid the tax. If the dealer dispenses on a prescription, the latter is recognized as sufficient evidence that the sale was to a consumer who is not liable for the tax. If the state law permits wholesalers to fill prescriptions, these prescriptions would be accepted the same as those of the retailer.

The same reply applies to the objections that exceptions (a) and (b) constitute an invasion of the state's exclusive right to police powers.

These exceptions do not change the liabilities of the physician or other dealers to register and pay the tax. They only relieve the patients from the necessity of presenting an order blank to the physician or pharmacist before they can ob-

tain the medicine. If the drug is dispensed by a physician, dentist, or veterinarian when they shall personally attend upon such patient, this is accepted as sufficient evidence that the drug is for consumption and not for resale, and consequently that the person who gets it is not liable for the tax. The physicians's prescription when filled by the pharmacist is accepted as evidence of the same fact.

They are properly incidental to the exercise of the taxing power, since they relate to evidence regarding payment or non-payment of the tax. The fact that the law chooses to accept such evidence as sufficient to show that the sale is to a consumer who is not required to pay a tax could not, in the writer's opinion, be construed as an undue invasion of the state's police powers.

Seventh. In passing upon the constitutionality of an act, a court would most certainly take into consideration the rights of the party claiming relief. The claimant could not attack the validity of an act except by pleading that it abridged some of his rights under the Constitution. Unless his constitutional rights are abridged, he has nothing to plead, and consequently no standing in court.

The case cited of the difference in the burden placed upon the sale of alcoholic liquors for beverage purposes, and their sale when used as the constituents of a medicine is exactly in point. The tax is levied upon the traffic in alcoholic liquors for the purpose of raising revenue, but the law recognizes that the sale in the one case may be opposed to the public welfare and in the other case in aid of it, and hence places the tax upon the one and not upon the other.

The Harrison Bill does not go even so far as this. It requires the tax from every dealer alike, whether sold for the purpose of a medicine or for ministering to a previous habit.

All that exceptions (a) and (b) amount to, *when viewed in their true light,* is to relieve the consumer (i. e., the patient) from the necessity of registering as a dealer—which he is not—and using an order blank upon which to obtain the medicine which his condition requires.

Eighth. The writer is a pharmacist, his sympathies are with the pharmacist, and he yields to no one in his readiness to defend every moral and constitutional right that the latter is entitled to, but he denies that the bill would invade any such rights.

If the bill proposes an inequality of obligation as between the physician and the pharmacist it can be removed only by increasing the obligations of the former or by decreasing those of the latter. As to the futility of increasing the obligation of the physician by requiring him to preserve his own record without supervision or control by a third party the writer has already expressed himself, and will not repeat the argument.

When it comes to reducing the obligations placed upon the pharmacist by the bill, the writer claims that the requirements are already as light as they should be. The pharmacist's moral and professional obligations, and in many cases the state laws require that he dispense these drugs, (when in such form and quantity as to create or foster a habit) only on a physician's prescription. The bill requires no more than this, and hence does not increase the burden which is now imposed upon him both by moral and by state law.

Ninth. The dope dispensing doctor might "claim" that he dispensed the drugs in the conduct of a lawful business and in the course of the legitimate practice of medicine, but when confronted by a Federal court and jury he would discover that there is a vast difference between "claiming" and proving.

Tenth. There was no error in stating that the phrase "registered under this act" was introduced into one of the earlier forms of the bill. The Bill known as H. R. 28277, introduced January 20, 1913, after the first Drug Trade Conference, contains on page 9 the following: "That nothing contained in this section shall apply to the delivery of prescriptions of physicians, dentists and veterinarians duly registered under this act, compounded by a person duly registered under this act."

It is beside the point to say that it was not "used in the same connection as in the present bill." The first bill was a regulation of interstate commerce; the present one is a tax measure, and consequently the connection could not be the same. The intent of the phrase in both bills, however, was the same, namely, to give to drugs when dispensed on physician's prescriptions a different status under the law than when dispensed without a prescription.

As stated in the editorial, the writer considers the danger of harm to the druggist from filling the prescriptions of unregistered physicians as rather remote. As the bill will compel every physician to register as a dealer, even if he dispenses only on emergency, as all must do sometimes, there is not one in a thousand who will risk the penalties of the law by not doing so. If objection had been made to the phrase before the National Drug Trade Conference adjourned it is likely that it would have been eliminated, not because of any particular danger due to its presence, but from a desire to make the bill as satisfactory to as many persons as possible.

That Congress will not pass the bill in exactly its present form is quite probable. It would be equally safe to prophesy that Congress will never pass any other bill of equal length and importance without making changes in its phraseology as introduced. J. H. BEAL.

<□>

BRIGHTER PROSPECTS FOR PRICE PROTECTION.

WHEN the retail druggist stood alone, as until recently he did, in asking for the maintenance of the advertised retail prices on proprietary articles the rate of progress toward the legal and public recognition of his claim was slow, and at times the movement has even seemed to be in the reverse direction.

This ill success has been due to the world-wide and almost world-old popular belief, or more properly superstition, that there is an enormous profit in the sale of drugs, and the contest between the aggressive cutter and his fellows has generally been regarded as a dispute between robbers over their ill gotten gains, or if any sympathy was aroused it was betowed upon the cutter, who was looked upon as being, partially at least, in favor of giving the public a square deal.

When the druggist attempted to tell his customers that his average net profits were even less than those of some other retailers, he was met with polite incredul-

ity or flat unbelief. Nor has this prejudice been confined alone to those whose opportunities for impartial observation might be presumed to be limited, but it was extened to those who might be presumed to know better. On several occasions when the writer has called the attention of his friends in the newspaper fraternity to the well considered and carefully prepared articles by Mr. Harry B. Mason on drug store profits, while he was listened to politely enough it was easy to see that his hearers were inclined to believe that Mr. Mason had somehow juggled the figures so as to make out a better case for the druggist than the facts warranted. If the newspaper man condescended to argue the case it was usually to point to the success of those who extensively advertised themselves as cutters, and yet were able to conduct several flourishing stores, and by their scale of living exhibit all of the external evidences of financial prospertiy.

If it was objected that these notorious cutters cut the prices of advertised proprietaries merely to create a reputation for cheapness, and relied for their profits upon the sale of their own make of substitutes for the advertised goods and by boosting the margins on goods the prices of which were not advertised, it was thought sufficient to reply that the average retailer ought to adopt the same policy and thus reap some of the prosperity that goes to the aggressive cutter.

In other words, the druggist's reputation as a taker of exorbitant profits is too deeply ingrained in the mind of the average man to be overcome either by evidence or argument to the contrary.

When, however, patented razors and cameras, copyrighted books, package groceries, and dozens of other articles widely advertised to sell at specified prices were seized upon by department stores and others to use in the same way they had used proprietary medicines—by advertising them at cut prices to draw people into their stores, and recoup themselves by the sale of more profitable articles,—then the regular dealers in these goods began to understand that the cause of the retail druggist was, after all, the cause of the square deal and fair play. The great difficulty has been, and still is, to reach and convince the purchasing public which, having only partial knowledge, has been persuaded that it has been profited by the price cutters.

Until one or two years ago, the task of reaching and instructing public sentiment seemed almost hopeless, but within that period there has appeared evidence, the volume of which is daily increasing, to show that the public conscience is at last beginning to be aroused to the economic and moral evils of price cutting upon fixed price goods, and is beginning to seriously consider legislation designed to prevent so-called competition from being used as an instrument for the destruction of real competition which always results when the independent small dealers are driven from the field.

The drug trade can now congratulate itself that its own members have done not a little to inaugurate the reform, and have secured through judicial decisions, not only a clear definition of the questions at issue, but also some clean-cut arguments in support of the principle of price maintenance, as in the case of the Miles Medical Co. vs. Park and Sons, in which Justice Holmes, in his dissenting opinion says:

"I cannot believe that in the long run the public will profit by this course, permitting knaves to cut reasonable prices for mere ulterior purposes of their own,

and thus to impair, if not destroy, the production and the sale of articles which it is assumed to be desirable the people should be able to get."

Since then the movement for adequate and proper price maintenance has received an important impetus by the organization and activities of the American Fair Trade League, which has enlisted the interests and co-operation of prominent publicists in their propaganda. One of the most notable of the recent utterances upon the subject is found in an article on "Cutthroat Prices," by Louis D. Brandeis, in a recent number of *Harper's Weekly*. In drawing a distinction between price maintenance and price fixing Mr. Brandeis uses the following argument:

"The independent producer of an article which bears his name or trade-mark —be he manufacturer or grower—seeks no special privilege when he makes contracts to prevent retailers from cutting his established price. The producer says in effect: 'That which I create, in which I embody my experience, to which I give my reputation, is my property. By my own effort I have created a product valuable not only to myself, but to the consumer; for I have endowed this specific article with qualities which the consumer desires, and which the consumer should be able to rely confidently upon receiving when he purchases my article in the original package. To be able to buy my article with the assurance that it possesses the desired qualities, is quite as much of value to the consumer who purchases it, as it is of value to the maker who is seeking to find customers for it. It is essential that the consumer should have confidence not only in the quality of my product, but in the fairness of the price he pays. And to accomplish a proper and adequate distribution of product guaranteed both as to quality and price, I must provide by contract against the retail price being cut.'

"The position of the independent producer who establishes the price at which his own trade-marked article shall be sold to the consumer must not be confused with that of a combination or trust which, controlling the market, fixes the price of a staple article. The independent producer is engaged in a business open to competition. He establishes his price at his peril—the peril that if he sets it too high, either the consumer will not buy or, if the article is, neverthless, popular, the high profits will invite even more competition. The consumer who pays the price established by an independent producer in a competitive line of business does so voluntarily; he pays the price asked, because he deems the article worth that price as compared with the cost of other competing articles. But when a trust fixes, through its monopoly power, the price of a staple article in common use, the consumer does not pay the price voluntarily. He pays under compulsion. There being no competitor he must pay the price fixed by the trust or be deprived of the use of the article."

In pointing out how, under the disguise of open competition, price cutting may become the most effective instrument in the creation and maintenance of monopoly, Mr. Brandeis presents the following cogent thoughts:

"The competition attained by prohibiting the producer of a trade-marked article from maintaining his established price offers nothing substantial. Such competition is superficial merely. It is sporadic, temporary, delusive. It fails to protect the public where protection is needed. It is powerless to prevent the trust from fixing extortionate prices for its product. The great corporation with ample capital, a perfected organization and a large volume of business, can establish its own agencies or sell direct to the consumer, and is in no danger of having its business destroyed by price-cutting among retailers. But the prohibition of price-maintenance imposes upon the small and independent producers a serious handi-

cap. Some avenue of escape must be sought by them; and it may be found in combination. Independent manufacturers without the capital or the volume of business requisite for engaging alone in the retail trade, will be apt to combine with existing chains of stores, or to join with other manufacturers similarly situated in establishing new chains of retail stores through which to market their products direct to the consumer. The process of exterminating the small independent retailer already hard pressed by capitalistic combinations—the mail-order houses, existing chains of stores, and the large department stores—would be greatly accelerated by such a movement. Already the displacement of the small independent business man by the huge corporation with its myriad of employees, its absentee ownership, and its financier control, presents a grave danger to our democracy. The social loss is great; and there is no economic gain. But the process of capitalizing free Americans is not an inevitable one. It is not even in accord with the natural law of business. It is largely the result of unwise, man-made, privilege-creating law, which has stimulated existing tendencies to inequality instead of discouraging them. Shall we, under the guise of protecting competition, further foster monopoly by creating immunity for the price-cutters?"

And, finally ,this very remarkable paper is closed with the following stirring appeal to the common sense and spirit of fair play of the American people:

"Americans should be under no illusions as to the value or effect of price-cutting. It has been the most potent weapon of monopoly—a means of killing the small rival to which the great trusts have resorted most frequently. It is so simple, so effective. Far-seeing organized capital secures by this means the co-operation of the short-sighted unorganized consumer to his own undoing. Thoughtless or weak, he yields to the temptation of trifling immediate gain; and selling his birthright for a mess of pottage, becomes himself an instrument of monopoly."

That the leaven is spreading is also apparent from the fact that many other independent and non-partisan journals of national circulation are beginning to quote with approval the arguments of the price protection advocates, as for example, the following which is quoted from the editorial columns of the *Saturday Evening Post:*

"Thoroughgoing followers of Adam Smith held that competition would cure everything. Give competition free sway and goods would be sold at the lowest possible price because manufacturers would bid against one another for customers; wages would be as high as possible because manufacturers would bid against one another for labor; goods would be of the best quality because such goods would attract the most buyers.

"Nobody, we suppose, believes that now. Experience contradicts it on every hand. Everyone who reads the newspapers sees that competition, instead of curing all evils, creates many. The Standard Oil Company was a perfect fruit of unlimited competition—being simply the competitor that survived and beat all others in a completely untrammeled field.

"Banks, railroads, insurance companies, meat packers, food manufacturers, and others, are restrained by law from competing in certain ways. It is said now that we want fair competition—which always means limited and restrained competition.

"The big thing before the forthcoming session of Congress will be the Administration's trust policy; and the big question concerning that policy is as to how much it will insist merely on competition.

"President Wilson has already signed a bill containing an exemption which im-

plies that monopolistic co-operation may be very beneficial for labor and for agricultural products, even with no supervision on behalf of the public. That is a pretty plain acknowledgment that competition is no cure-all."

Additional encouragement is found in the fact that politicians in search of popular issues are also beginning to see the light, as is witnessed by the recent report of a newspaper interview with Secretary McAdoo, who as a member of the President's official family may be expected to be in accord with the policy of the present administration:

"How would you regulate monopoly?" I inquired.

"I do not believe you can successfully regulate monopoly by permitting it to exist and by then passing laws to control it. Some men advocate this, prominently among whom is Mr. George W. Perkins. There are others equally as conspicuous. The only way to regulate monopoly successfully is to prevent it. I believe in prevention. What we ought to do is to regulate competition. By that I mean that we should pass such legislation as will preserve the virtues of comtition and destroy its brutalities."

"Brutalities?" I interrupted.

"Yes, brutalities. Competition is full of them, but they are not half so great an evil as the brutalities of monopoly. Let me give you an instance of what I mean by the brutalities of competition. Suppose you own an oil refinery in Indiana and are doing a sound and profitable business in your own zone, which let us say, extends within radius of 200 miles from your establishment.

"Now, suppose that the Standard Oil Company, which has business throughout the United States, invades your territory and finds that you are in its way. It cuts the price of oil below the cost of production and drives you out of business. That is what I call one of the brutalities of competition.

"The Standard Oil Company would lose money in your territory while the fight was going on, but it could increase its price in other parts of the country, where it had a monopoly, and reimburse itself for these losses it was meeting in your territory. After it had driven you out of business it could put up the price in your territory and recoup again what it spent in disposing of you as a competitor.

"It should be made unlawful for a corporation to engage in this kind of practice. It is harmful in every respect, injurious to the public interest, and destructive to proper business standards and ethics. To my mind it is one of the most interesting economic problems of the day, and I have no doubt that it will receive attention by Congress when the whole question of trusts and monopolies is again considered."

In this connection also the writer takes the liberty of quoting from an article by J. Leyden White in a late issue of the *N. A. R. D. Journal,* in which it is shown in a convincing way that the battle for fair prices is not a struggle for special privileges to the retailer, but only an attempt to secure for him equality of commercial opportunity under the law, so that what are now special privileges enjoyed by the few may be converted into general privileges open to all alike. Mr. White says:

"The farmers who originate it, the producers, the growers, demand that they shall have a right to combine for selling purposes, for the price-fixing of corn, simply to protect themselves from their cut-rate competitors, the brokers. In this demand they are solidly backed by all union labor, by all country dwellers who have to do with them, even by country druggists. So powerful is this demand of the right to combine to preserve the farmer's profits on corn (and other products) that the General Deficiency Bill that recently became a law, in so far as that bill could, exempted farmers from the operation of the Sherman anti-trust law.

"The railroad men who take the corn from the farmers are unionized. So are the steamboat men, the longshoremen, freight handlers of all classes, the elevator men, the teamsters and all other labor concerned with its transportation. To defend itself against the cutters that menace it, every element of this labor demands the right to fix its own profits, its wages. This right to defend iself against the cutters whom it call 'scabs' is now generally acknowledged. As the corn goes into a manufactured article, let us say corn flakes, every element of labor, including even the printers of its advertising matter, has the power to combine, and does combine to fix, and does fix its own profit on the corn, by fixing its own wage.

"And did you ever hear of any association of jobbers or manufacturers being afraid to meet organized labor to fix prices, profits, wages, on anything with which labor is concerned? Ever hear them use the Sherman law spook on wage earners as they do on retailers?

"In the various sales of the corn, from the farm to the consumer, every price, every profit is fixed by combination. Brokers, elevator men, commission men, millers, bakers, manufacturers, all fix their profits on corn in their exchanges, boards, of trade, milling associations, and so forth. True, some of them are called 'trusts," some are said to violate that Sherman spook, but as far as actual stoppage of any of their price-fixing is concerned—it's a joke.

"I said that every price, every wage, every profit is fixed. As a matter of fact, within or without the law, and with the favor of the actual majority of American citizens, every profit coming from the corn, from planter to eater, is practically, although not entirely satisfactorily fixed by the people making the profit, *except in one case.*

"The retail grocers who sell the canned corn or the corn flakes are not allowed to fix their wages, their profits. There the chain breaks, there is the missing link!

"The labor union of girls who fill the boxes with corn flakes can meet their employers, demand a meeting and fix their profit, their wage, and neither public sentiment nor law says nay. But let the same manufacturer dare to meet with retail grocers to fix their profits, their wages, and lo, and behold, the majesty of the law, the power of Government steps in—and keeps the chain from being consistently linked up."

The question is no longer one for academic discussion by trade associations, but has become one of practical politics, and the contest for fair and honest competition has been transferred from the courts to the floors of the state and national legislative bodies.

The cause of the retailer is so just and reasonable that it needs only to be presented clearly and forcibly in order to win legislative approval. It is now up to the retailers of every class to see to it that those who make the laws are fully informed on the subject, and duly impressed with the earnestness and political force of those who make the law makers.

J. H. BEAL.

<□>

THE PRESENT STATUS OF THE HUGHES-BACON BILL.

THE annual report of the Surgeon General to the Secretary of War makes a strong plea for the increase and improvement of the status of the Army Hospital Corps. This report has just been published. We quote from it the following:

"I can not in transmitting this, my last, annual report fail to call your attention to one particular in which the Medical Department is unprepared to fulfill its responsibilties to the Army and the Nation. It is one which has been the sub-

ject of frequent communications from this office in the last few years and has been pointed out for several years in the annual reports—this is the great deficiency in number of the Hospital Corps; so that when the tactical divisions of the Regular Army take the field they can have not more than one-fourth of the sanitary units required for the medical service and called for by the Field Service Regulations. In fact the first division stationed in the Eastern Department has not a single sanitary unit. No action by Congress is necessary to remedy this defect, since Congress, in order that such deficiency might be avoided, has placed in the hands of the President the responsibility for providing a sufficiently numerous Hospital Corps to care for the sick and wounded, and has specifically stated that they shall not be counted as a part of the strength of the Army. It is believed that Congress has thus shown the intention that our Army shall have an adequate medical service proportioned to its strength, and this is what I have repeatedly urged. It is also believed that if the Secretary would recommend to Congress the reorganization of the Hospital Corps, which is asked for in this report, it will be easily obtained and will much facilitate the recruitment of suitable men for this relatively unattractive service.

"The authorized strength of the Hospital Corps is as follows:

Sergeants, first-class	300
Sergeants	362
Corporals	50
Private, first-class and privates	2800
Total	3512

"The number of sergeants, first-class, is fixed by law, the total strength of the Hospital Corps and number in the various other grades is determined by Executive order.

"In service June 30, 1913

Sergeants, first-class	295
Sergeants	336
Corporals	38
Acting cooks	190
Privates, first-class and privates	2560
Total	3419

"It will be observed that the Hospital Corps is over 2½ percent. below its authorized strength. It has been found impossible to keep this corps at its normal strength by enlistments, or by voluntary transfer from the line. On four occasions during the year requests have been made to the Adjutant General for the transfer of unassigned recruits from the various depots to fill vacancies, and these requests have been complied with in so far as practicable. About 225 men have been transferred to the corps as a result of this policy. It has not resulted, however, in obtaining the most desirable class of men for service with the sick.

"The authorized strength of the Hospital Corps (3,512) is inadequate for the needs of the service, and does not provide the number of men prescribed by Army Regulations for duty with the Army as now constituted. When the allowance of 3,500 men was fixed for the Hospital Corps, the strength of the Army was less than 76,000. Its present authorized strength, exclusive of Hospital Corps and Philippine Scouts, is about 84,810, and a corresponding increase in the Hospital Corps would bring that organization up to 3905.

"As previously stated in this report, it has been impossible to keep the Hospital Corps filled up to its authorized strength by enlistment and reenlistment, and there has been a constant drain upon it by the transfer of desirable men to

the line and to other staff corps. This is interpreted to mean that the relative desirability of service in the Hospital Corps has lessened since the organization of the corps.

"In his annual report for the fiscal year 1911-12, the commanding general, Central Division, alludes to this condition of affairs in the following terms: 'The discipline and work of the Hospital Corps has been excellent. There has been some difficulty in keeping the detachments up to their authorized maximum strength, as the Hospital Corps does not offer sufficient inducements to make men desire to transfer to it from the line.'

"When the Hospital Corps was organized in 1887, it was recognized that its members would be required to do work that was not attractive to enlisted men and which required special qualifications. To secure a suitable class of men to do such work, non-commissioned officers of the Hospital Corps were given pay considerably in excess of most non-commissioned officers of the line. At a later date the pay of privates was likewise proportionately increased. This principle was lost sight of in the legislation of 1908, when the pay of the line was increased. In the meantime special grades of non-commissioned officers have been made in other branches of the service and various ratings established whereby the opportuntities for promotion of intelligent men have been increased and opportunities for a substantial increase of pay have been provided. Opportunities for extra-duty pay are provided in other branches of the service, but are denied to Hospital Corps soldier.

"Bills are now pending in Congress which provide the following grades and rates of pay for the Hospital Corps: Sergeants major (new grade) 30, at $75 per month, with the increased pay for service as now authorized for sergeants, first-class; sergeants, first-class, 300, pay to be increased from $50 to $65 per month; sergeants, pay to be increased from $30 to $36 per month; corporals, $24 per month, (no increase); privates, first-class, pay to be increased from $18 to $21 per month; privates, $16 per month, (no increase.)

"These bills were proposed and introduced without any prompting on the part of this office, but are in accordance with its ideas, and it is believed that if the measure were given the support of the Secretary of War it would become a law.

"Such a law would undoubtedly be for the benefit of the service by increasing the desirability of the Hospital Corps and attracting thereto a better class of men; and the additional higher grade contemplated would provide a more adequate compensation for a limited number of specially skilled men, such as pharmacists of exceptional ability, X-ray experts, anesthetists, and others of a class who can now command in civil life a higher rate of pay than is afforded them in the service.

"In consideration of the special functions of the mobile organzations, there is required for duty with them a certain number of men having qualifications different from those generally required for Hospital Corps soldiers. I therefore recommend that there be allowed for each ambulance company 1 horseshoer at $30 per month, and 1 farrier, 1 saddler, and 15 wagoners, each at $21 per month." and for each field hospital 1 artificer and 8 wagoners, each at $21 per month."

In explanation of the last paragraph it should be said that the Army organization provides field service, hospitals and ambulance companies which have as important accessories, ambulances and other wagons with the necessary horses and mules. Organizations of the line provided with similar transportation, have farriers, horseshoers, wagoners, etc., who receive higher rates of pay than the privates. We believe that members of the Hospital Corps who perform similar duties with our field organizations should receive similar rates of pay. It is our

intention to make provision for these in the Hughes-Bacon Bill as reintroduced at the regular session of Congress and our committee is working toward that end.

In this connection it is of interest to quote from the annual Report of the Brigadier General Tasker H. Bliss, U. S. Army, Commanding the Southern Department:

"The condition of the Hospital Corps at the present time is a matter of very serious concern. The number of men present for duty is altogether too small to permit the efficient performance of the work that regulations, orders and customs of the service seem to require to be done. The service is so arduous for the really good men, and so unattractive, and the pay is so small that the application for transfer to the Corps of a superior man is now an extremely rare occurence. There are very few applications for authority to re-enlist, while there is a constant depletion due to desertions and discharges.

"The medical and sanitary service could be performed in a much more satisfactory and creditable manner than at present were the hospital quota increased by fifty percent. and its quality could be improved by offering a larger stipend."

Our committee scarcely expected any action at the special session of Congress recently closed, fully realizing that the tariff and currency legislation would preclude the consideration of our bills. We have promise of a hearing early in the present regular session and we urge upon all pharmacists the importance of calling the attention of their representatives in Congress both Senators and Representatives to the national importance of the Hughes-Bacon Bills as bearing upon the efficiency of our Army and the need for the prompt passage of this legislation.

W. B. DAY.

Scientific Section

Papers Presented at the Sixty-First Annual Convention

THE PHARMACOGNOSY MUSEUM.

E. N. GATHERCOAL, CHICAGO.

A museum, according to Webster, is a collection of natural, scientific or literary curiosities. The object of a museum, according to the above definition, would be to arouse and satisfy curiosity, and such is the prime object of all museums. However, the term museum has taken on a broader meaning so as to include among its functions the opportunity for instruction and research, the preservation of historical material and of such articles as are rare in nature and commerce.

Pharmacognosy in a broad sense is the scientific treating of the physical characteristics of medicinal substances, therefore a pharmacognosy museum may be defined as a collection of such natural, scientific and literary articles as are medicinal substances or relate to the same, said collection being designed to arouse and satisfy curiosity, to instruct and give opportunity for research, to preserve rare and historical material. In the most restricted sense, however, pharmacognosy considers only crude animal and vegetable drugs and under this definition only such drugs are included in the pharmacognosy museum. Within these limits every curator of such a museum places his own definition upon the term.

The object of this paper is to present more or less comprehensive answers to the following questions:

(1) What is the value of a pharmacognosy museum to the college of pharmacy? To the teachers? To the students? To the alumni?

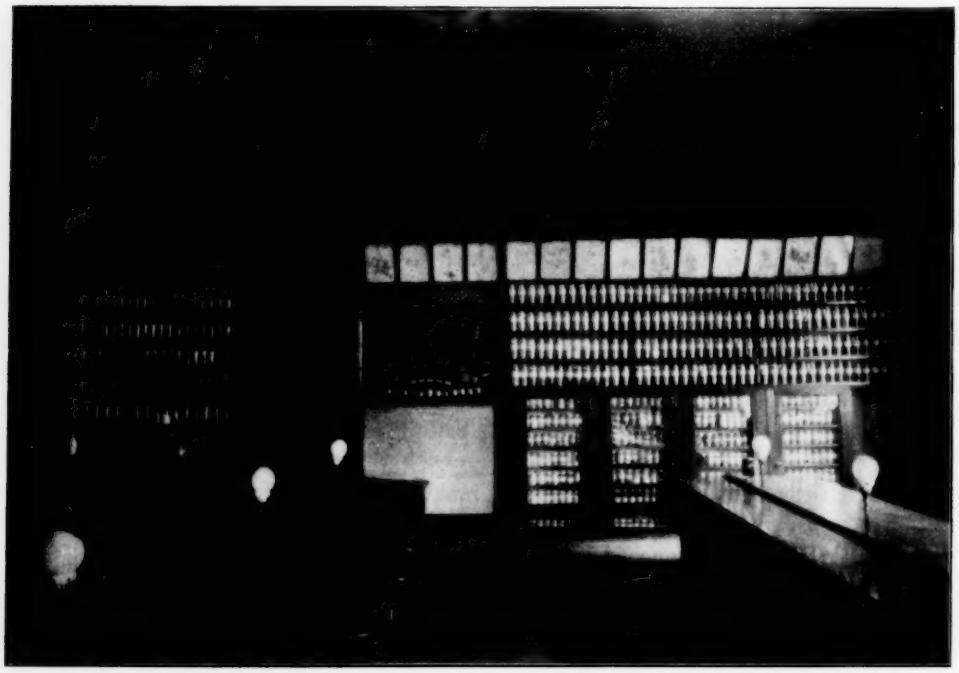
(2) How much money should be spent for this museum by the college? How much time given by the teachers to its upbuilding?

(3) What should be the scope of this museum, i. e., what articles should be contained in it?

(4) Where should the museum be situated, how arranged and catalogued and under what rules or arrangements should it be open to afford the utmost facility for use?

The answer to the first question may be presented in two ways: First, the museum of the average college of pharmacy should be subordinate to the library, to the equipment of the laboratories and to the quality of the teachers. That is, out of the definite sum that is allotted for expenditure by the college, high grade

teachers should be provided first, well-equipped laboratories next, a modern pharmaceutical library third, and the museum fourth. Second, the value of the museum to the college is very great. No student should be expected to learn the physical characteristics of a drug, chemical or medicine without having the opportunity of seeing, tasting and smelling the article. No teacher should attempt to present the description of any article of pharmacognosy without being fully familiar with its commercial appearance. The museum is the place to learn the appearance of a drug in a way that it will be remembered. For research work in pharmacognosy the value of the museum is unquestioned. To the average



Collection of Rare, Foreign and Powdered Drugs, University of Illinois, School of Pharmacy.

pharmacist, the alumnus, the museum gradually becomes naught but a pleasant memory, largely because it is so situated as to be unavailable for quick and easy use. Where the museums are accessibly located, the alumni often find them of great value for reference. As an advertisement a museum is without doubt an asset to the college. The prospective student in his inspection of the school lingers longest over the orderly array of specimens and cases here presented.

In answer to the next question as to what shall be the scope, the size of the museum, I assume that the ideal of each curator or teacher who chances to read this item: the museum under Dr. Tschirch at the University of Berne with its 50,000 catalogued articles. However, the ideal must give place to the real. Beginning with a college of pharmacy without any collection of drugs that could

by any courtesy be named a museum: one hundred dollars a year for ten years judiciously expended by a capable, earnest curator would provide a fine nucleus for a good museum. A museum when once established largely grows without any serious expenditure of time or money. Little gifts each of relatively small value to the donor are being constantly received. Specimens of drugs often rare and therefore valuable in the museum are received from time to time for purposes of identification. The residue of samples obtained for inspection from the custom's service may be added to the museum. Samples of fine chemicals and galenicals prepared in the class room find their place in the museum. Col-

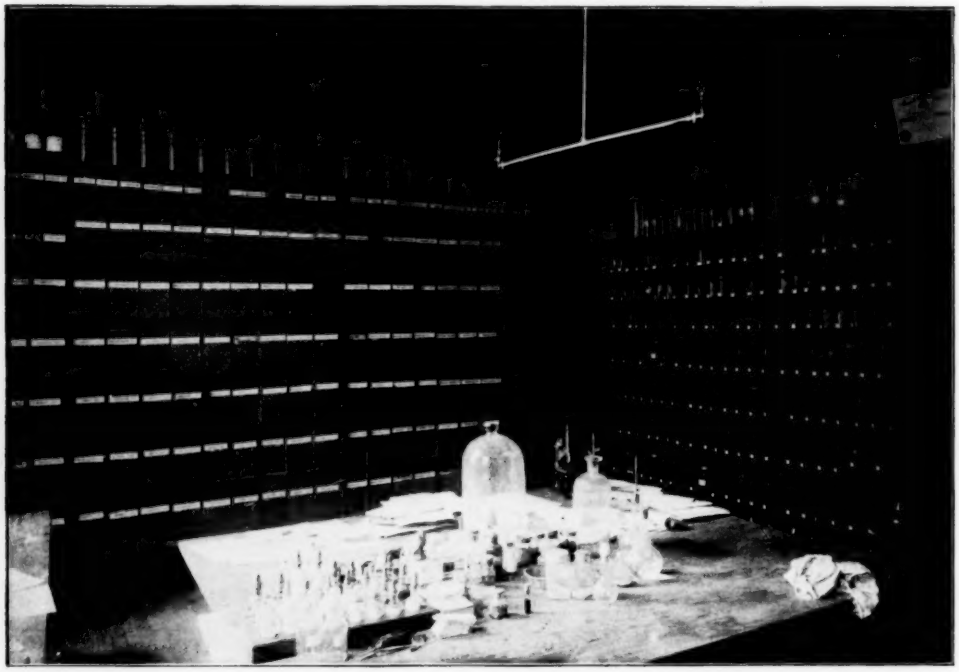
Collection of Official Drugs, University of Illinois, School of Pharmacy.

lections of medicinal chemicals, inorganic and organic, of pharmaceuticals, of alkaloids, active principles and volatile oils are ofttimes presented to the museum by manufacturers of these respective classes of drugs. Crude drugs may be purchased in small quantities, pound or half pounds, from drug importing firms or foreign drug dealers, if the statement is made with the order that the drugs are for museum samples. But one of the most important means of supplying the museum with its choicest specimens is through the collection by friends in our own and in foreign countries of items suitable for the museum.

What shall be included in the museum? The pharmacognosy museum may be divided in a general way into the Crude Drug or Pharmacognosy Proper Division, the Chemical Division and the Pharmaceutical Division.

There will be criticism, I know, against including the chemical and pharmaceutical museums under the general title of Pharmacognosy, however, I defend the title as a good one to apply to the whole College of Pharmacy Museum.

Crude Drug Division.—A crude drug is generally understood to be one consisting of the whole or a part of a plant or animal which has undergone but little change other than drying. Under such a definition the ethereal oils obtained by distillation, the fixed oils obtained by pressure and subsequent purification and the alkaloids and active principles would not be included in the crude drug division,



Fresh Drugs in Alcohol and Crude Drugs, University of Illinois, School of Pharmacy.

but the balsams, oleoresins, resins and gums which have exuded naturally or after incision of the plant and even evaporated plant juices should be included.

The number of crude drugs that have been used by man is legion. From the earliest civilization until recent times they have been much more extensively used than chemical substances. Within the last century chemicals as medicines have become more popular.

The crude drugs fall into a number of groups, the most important of which is the Official Crude Drugs. The official group includes all the crude drugs defined in the current U. S. P. and probably should include the drugs of the National Formulary as well. Whether this group should include drugs not official in the United States but that are defined in foreign pharmacopœias is a question, though in the museum in which I am personally interested we have included

in the Officials not only those drugs defined in the current U. S. P., but also those that have been named in all the revisions of the U. S. P. since the original issue in 1820, and those official in the current pharmacopœias of Europe. Thus our Officials group has become quite large, including upward of 600 titles.

Unofficial Crude Drugs.—The second great group of crude drugs is often designated the Unofficials. This term ordinarily is restricted to those drugs in common use in one's country but not recognized in the national pharmacopœia. However, in our museum we have included in the Unofficials those drugs found in commerce in North America and Europe, but not named in the pharmacopœias of the United States or Europe.

In the large dispensatories and codexes there is described a long list of unofficial drugs, while an examination of one of the more comprehensive American or European drug price lists reveals the fact that here is named a large number of crude drugs included in neither pharmacopœia nor dispensatory. In fact it seems impossible to find a limit to the Unofficial Group.

Native Drugs of Foreign Countries.—Collections of drugs in common use in countries beyond North America and Europe are of value and interest. Thus the native drugs of China form a very extensive and interesting collection, as do also similar collections from Burma and the East Indies, from India, from several districts of Africa and from South America. Such collections fairly complete are difficult to obtain except from a native or resident of the locality.

Drugs in Original Packages.—The containers in which drugs enter commerce and "original packages" of drugs are always items of interest and instructive value. They may be obtained, usually without cost, from jobbers and importers.

The commercial varieties of a single drug make an interesting collection, such as opium, acacia, cinchona, rhubarb, etc., which enters commerce from different countries or localities, which is of several grades of quality or which occurs in several commercial forms.

Adulterated drugs are often found in commerce, especially in the customs houses and in the store rooms of importers, wholesalers and manufacturers. A sample preserved from each lot of adulterated drug met with will soon form a most valuable collection.

Drug Adulterants.—Substances that are or have been employed for adulterating drugs form an exceedingly interesting portion of the crude drug museum. Specimens of such adulterants may be had by garbling the adulterated drug.

Crude drugs preserved in a fresh state in alcohol or by other means are of especial use for the histological study of drugs. A collection of such fresh material can be gradually accumulated and eventually becomes of great value.

A collection of powdered drugs is a necessity in any well-organized pharmacognosy museum. Powdered drugs have largely replaced whole crude drugs in commerce and the pharmacognocist must be familiar with the gross and microscopic appearance of drugs in powdered form.

An herbarium of drug-yielding plants forms an important portion of the

pharmacognosy museum. Such an herbarium should be given first place. The drug plants native to the locality of the museum can be increased by purchase, exchange or travel so as to include specimens of the plants yielding all the more important drugs.

There always forms in the museum a collection noteworthy because of the historical interest of the articles included, such as amulets, charms, drugs used in former times but now neglected, drug samples of great age, drugs at one time possessed by a famous pharmacognocist or pharmacist.

Pictures and lantern slides of drugs and of drug-yielding plants, of drug containers, of the process of drug collection and of drug cultivation, etc.; portraits of pharmacognocists of note; manuscripts and books relating to pharmacognosy that because of age or rarity or especial value should be preserved—all of these may be gathered into still another section of the crude drugs division.

Chemical Division.—The chemistry division of the pharmacognosy museum is arranged in a general way similarily to the crude drug division. A chemical may be defined as a substance possessing a definite molecular composition. Thus this division of the museum would contain all those medicinal substances to which have been ascribed chemical formulas.

The articles in the chemical museum naturally fall into a number of groups, which may be designated somewhat as follows:

Inorganic Medicinal Chemicals.
Organic Medicinal Chemicals.
The Elements.
Ores and Chemicals as found in Nature.
Exhibits illustrating the Preparation of Medicinal Chemicals.
Adulterated Chemicals.
Chemical Reagents.
Chemical Apparatus.

The Inorganic and Organic Sections would include, first, those chemicals official in the pharmacopœias of the U. S. and Europe, and, second, those Unofficials mentioned in the dispensatories and price lists. The special collections are of great interest and value, especially where they are fairly complete, nicely arranged and well exhibited.

Pharmaceutical Division.—The pharmaceutical division of the pharmacognosy museum is of especial interest to the pharmacy student and pharmacist because the items contained therein are largely the products of his own skill; articles which he has presented to the museum and of which he possesses an intimate knowledge.

There might be included in the pharmaceutical museum the following sections:

Official Galenicals.
Unofficial Galenicals.
Alkaloids and Active Principles.

Ethereal and Fixed Oils.
Disinfected Surgical Supplies, including
    Cottons, Gauzes, Bandages, Ligatures and Plasters.
Adulterated Pharmaceuticals.
Pharmaceutical Apparatus—
    Modern, Ancient, Rare, and Historical.
Pictures, Portraits, Books, Manuscripts, Prescriptions.

Finally, a very short discussion of the fourth point—the location, preservation and arrangement of the museum.

The whole museum may be gathered together and located in one room or it may be located in various rooms throughout the college building. The plan of locating it all at one place, usually a room in connection with the library so that the librarian may also look after the museum, has several advantages, the principal ones of which are: the more impressive appearance made by such an arrangement, the increased facility of use, the advantages presented in cataloging, the assurance of safety which the constant presence of the curator implies.

There are, however, advantages in having the exhibits scattered in the various laboratories and lecture halls, under direct charge of the teachers, especially for the smaller colleges of pharmacy. Thus, much of the formality and inaccessibility of the formal museum is lost: students and teachers, especially, will use the various exhibits much more extensively if they are very conveniently located. Like the dictionary, if it is at your elbow you use it much more often than if it is in the other room. Again the exhibits may often be much better displayed because of the abundance of well lighted wall space in a number of rooms, whereas they would be dark and crowded in a single room. Further, in my opinion, the teachers in each department give more readily of their time and attention to their respective divisions of the museum than if the whole museum was placed in the exclusive charge of one person.

The arrangement of the museum is largely one of personal choice on the part of the curator, though the following points should be observed:

Display each article with such a lighting that it may be studied in detail to the best advantage.

Preserve materials that may deteriorate against deleterious influences, especially sunlight, dust and insects.

Arrange the exhibits in such a way that, given its catalogue number a visitor may easily find any article.

Arrange and label at least the more important exhibits such as the official and unofficial crude drugs, the inorganic and organic chemicals and the official and unofficial galenicals so that any article may be readily found without the catalog numbers.

In the museum of the University of Illinois School of Pharmacy, we have used in the crude drug division for the Officials half-gallon, glass-stoppered, wide-mouth bottles, each bearing a single-line paper label on the neck of the bottle with

hand-painted plain square letters about one-half inch high. Each drug is labeled with its pharmacopœial name, the abbreviated name of the pharmacopœia in which it is defined if other than the U. S. P., and the date of the revision in which it was last official.

The Unofficials are in similar bottles with the label bearing, however, only the botanical name of the plant yielding the drug.

Each of these exhibits is arranged alphabetically on open wall shelving in the roomy pharmacognosy laboratory. These exhibits are accessible to any student or visitor during the time the laboratory is open and upon request at any time the college building is open. The samples of many of the U. S. P. drugs are renewed annually.

The rare foreign drug exhibit is contained in screw-cap glass jars with a several line label stating the botanical source of the drug, the country from whence obtained, etc.

The exhibits of adulterated drugs, drug adulterants and commercial varieties are in quart glass-stoppered bottles arranged on open shelving.

The powdered drugs are in half-pint screw cap glass jars in glass front wall cases.

The fresh crude drugs in alcohol or formaldehyde are contained in pint and quart glass-capped jars.

The original packages are mostly exhibited in large glass front wall cases in the pharmacognosy lecture hall.

The herabarium of drug-yielding plants is in a regular herbarium case.

The walls of the laboratory bear many framed prints in color of drug plants.

In the Chemistry Division the inorganic and organic chemicals are displayed in glass-stoppered bottles on shelving in the laboratory, the elements are in a special small case, the apparatus in large glass front wall cases in the chemistry lecture hall.

In the Pharmaceutical Division the galenicals are mostly in pint cork-stoppered bottles, the alkaloids and active principles in slender footed display bottles, and the other displays in various wall cases in the large pharmacy.

In addition to these displays the college possesses portraits in oil of its deceased teachers and of a number of prominent pharmacists of the U. S. and Europe. Hanging from the walls of the lecture halls and library are photographs of every graduate and teacher of the college since the first graduating class fifty-two years ago. In the library are many old and rare books on materia medica, pharmacy and chemistry.

Some day if opportunity offers we may gather this scattered museum into one room, yet we may suffer disappointment if we do so, for the present arrangement is very satisfactory and affords abundant chance for growth.

UNIVERSITY OF ILLINOIS SCHOOL OF PHARMACY, Chicago.

THE ANALYSIS OF VANILLA EXTRACT.

CHARLES H. LAWALL AND LEROY FORMAN.

Vanilla extract is defined by the U. S. Department of Agriculture standards as "the flavoring extract prepared from the vanilla bean, with or without sugar or glycerin and contains in 100 cc. the soluble matters from not less than 10 gm. of the vanilla bean."

The vanilla bean is, according to the same authority, "the dried cured fruit of *Vanilla planifolia.*"

The tincture of vanilla of the U. S. P. is a preparation conforming to the foregoing standards and the process described in that work is taken as a type process for the preparation of a standard preparation for purposes of comparison by many authorities. Inasmuch as there is nothing said in the standards about the grade or geographical origin of the vanilla beans, it logically follows that a multitude of sins are committed under the name of vanilla extract. The only commercial variety of vanilla bean which is not derived from the *Vanilla planifolia* is the inferior Tahiti bean which comes from a species called *Vanilla pompona,* so that the manufacturer may legally use any grade of Mexican, Bourbon or other variety of bean and make an extract true to the name "vanilla extract," and, to tell the real truth of the matter, there is no way of telling from the composition of the finished article what kind or grade of beans have been used, except by the flavor and aroma, characters not determinable by analytical procedure. Even the inferior Tahiti beans may be used without fear of detection, so the judging of a vanilla extract, after all, depends largely upon the exercise of the critical faculties of taste and smell.

There are certain factors, however, which, when ascertained, aid in arriving at a conclusion as to the genuineness of the product, and give some idea as to its quality. Of these, the principal ones commonly taken into account in judging of an extract are:

1 Percentage of alcohol.
2 Percentage of residue upon evaporation.
3 Percentage of ash.
4 Percentage of vanillin.
5 Percentage or relative amount of resins and character of same.
6 Character of color.
7 Presence or absence of such foreign substances as coumarin, acetanilide, etc.

The percentage of alcohol is of importance on account of the fact that if too little be used in extracting the beans the product is deficient in resins and consequently inferior in its flavoring value and aroma. Too much alcohol is also productive of an inferior product. The 60 percent alcoholic menstruum of the U. S. P. tintcure is about the upper limit for a first class product and by far the greater number of manufacturers use a 50 percent. alcohol or even slightly lower. The percentage of alcohol in the finished product therefore ranges in high grade extracts from 35 to 55 percent. by volume and the majority are in the neighborhood of 40 percent. Some few commercial extracts of wide reputation are slightly below 35 percent., but they are always more or less turbid from the partial precipitation of resinous matter.

The alcohol may be readily estimated by taking a measured volume of 25 cc. of the extract and diluting it with about 60 cc. of water, placing it in an Erlenmeyer flask connected with a well cooled condenser and distilling off exactly 50 cc. for determination of the alcoholic strength by taking its specific gravity and referring to the appropriate table in the appendix of the U. S. P.

The percentage of residue upon evaporation is usually determined in routine practice more for the sake of observing the character of the residue and for purposes of comparison than for any real value which it possesses as there is no restriction as to the amount of sugar or glycerin which may be used, either of which, of course, increases the amount of residue in proportion to the amount present. It is customary to estimate the residue in 5 cc. of the extract by drying to constant weight upon the water bath.

The percentage of ash, which may readily be ascertained by igniting the residue after its determination, is of value in detecting the use of fixed alkali such as sodium or potassium carbonates or hydroxides, which are sometimes though rarely used to aid in extracting the resinous matter from the beans with a lower percentage of alcohol than would be otherwise possible. The percentage of ash varies somewhat in genuine extracts but we have never seen one which contained more than 0.50 percent by weight.

The percentage of vanillin may vary form 0.10 percent to 0.25 percent in a genuine vanilla extract, which is quite a wide variation when one takes time to consider it. As the value of the extract is largely dependent upon the amount of this constituent present it is customary to estimate it, which can be very readily done by a shaking out process.

The official method of the A. O. A. C. provides for the dealcoholizing of the extract as a preliminary step by repeatedly evaporating to a small volume at a temperature below 70° C. In a large number of analyses made by this method and also by a method simply based upon the removal of the alcohol at water bath temperature, we have been unable to detect any appreciable difference in the results and believe that the amount of vanillin lost by volatilization during concentration is negligible. A simple and satisfactory method is as follows —:

Measure 25 cc. of the extract into a shallow evaporating dish and concentrate to about one third of its volume upon the water bath. Add hot water to make up the original volume and observe the character and amount of resinous matter which precipitates at this stage of the procedure. Then add lead acetate T. S., drop by drop, until no further precipitation is produced. Filter while still warm through a plaited filter into a separatory funnel, washing the residue on the filter with small portions of hot water, being careful not have more than 50 cc. of total filtrate. Add to the liquid in the separatory funnel 25 cc. of ether and agitate thoroughly. When the liquids have separated, draw off the lower aqueous portion and transfer the ether (now containing most of the vanillin) to a tared glass capsule.

Place the aqueous liquid again in the separator, add a fresh portion of 25 cc of ether and repeat the operation, adding the ether to that in the glass capsule. Repeat this procedure a third time, using 15 cc. of ether for the final extraction. The combined ether extractions, when evaporated to dryness at room temperature, leave a varnish like film of nearly colorless vanillin, which upon standing

for a few hours, usually crystallizes in fan shaped radiating crystalline masses throughout the film.

The percentage of vanillin by this method in a high grade extract will be in the neighborhood of 0.20 percent. An extract containing over 0.30 percent is looked upon with suspicion as containing added vanillin. Some cheap extracts contain over 1 percent of vanillin to make up for the deficiency in aroma due to resins, etc. It sometimes happens that when a single bottle of extract of vanilla (holding about 1 fl. oz.) is the only sample available, the procedure as above outlined for alcohol, vanillin, etc., must be modified. Excellent comparative results, agreeing within 0.01 percent as a rule, in the vanillin estimation, have been obtained by the following procedure:

Estimate the alcohol as previously directed, using an asbestos mat between the burner and the flask. Allow the residue from the alcoholic determination to cool in the flask. Then transfer it to the separator without filtering, using water to rinse out the flask. Shake out the liquid in the separator with two portions of 25 cc. each of chloroform and evaporate the chloroform in a tared glass capsule. The residue will be almost pure vanillin, agreeing closely with the results obtained by the use of the official method or the modification previously described.

After shaking out with chloroform, the liquid in the separator may be transferred to a graduated cylinder and an aliquot portion taken for the determination of the residue and the balance used for the tests of the resins to be subsequently described. Thus all of the principal characters may be ascertained in a 30 cc. sample, using 25 cc. for the alcohol, vanillin, resins and residue. The remaining 5 cc. may be used for the caramel test also subsequently described in this article.

The percentage of resins is rarely determined on account of the difficulty of collecting them upon a filter. However, upon dealcoholizing and diluting as directed under determination of vanillin and then passing through a filter, the portion which adheres to the filter may be used for certain identifying tests for the detection of foreign resins, such as color reactions with acids, specfic tests for rosin, etc.

An arbitrary factor called the lead number, which is largely influenced by the percentage of normal resins present, is sometimes ascertained by estimating the amount of lead acetate precipitated from a solution of known strength under carefully standardized conditions.

This is a complicated and tedious operation, only of value in doubtful cases and will not be described here.

The character of the color is an important factor. Any caramel color at all is evidence of fraud. The former tests for caramel, such as fullers' earth test, paraldehyde test, amyl alcohol test, etc., were all unsatisfactory. A test which has recently appeared in literature and which upon careful investigation has been found to be extremely reliable is given herewith. Prepare a reagent as follows:

Tannic acid	5.00 gm.
Sulphuric acid	3.75 cc.
Water q. s. to make	250.00 cc.

Take equal parts of the above reagent and of extract of vanilla in a test tube

and heat the mixture to boiling. Stand it aside for 12 hours or over night and observe the character of the precipitated residue at the end of that time. A genuine extract of vanilla will show a flocculent, brownish precipitate which shows no tendency to adhere to the bottom of the test tube. Any caramel present will be indicated by a blackish brown sediment adherent to the bottom of the test tube. In applying this test the best results are obtained when specimens of known composition (of both genuine and caramel colored goods) are simultaneously tested.

Coumarin, the odorous principle of the tonka bean, is frequently present in cheap or imitation vanilla extracts, either through tonka beans having been used or by the addition of coumarin itself. The odor of coumarin is so distinctive, even when present in small proportions in combination with vanillin, that it is not always necessary to test for it. Where its presence is suspected it may readily be detected by redissolving the previously estimated vanillin in ether, transferring to a separatory funnel and shaking out with three or four portions of 2 per cent ammonia water. This shaking out removes the vanillin completely and upon again evaporating the ethereal solution in a glass capsule any coumarin present will be left as a residue and may be weighed and identified by its color and its melting point of 67° C. (vanillin has a melting point of 80° C.).

Acetanilide, which has sometimes been found as an adulterant of vanillin, would also be left as a residue from this second ethereal solution with the coumarin, and it may easily be detected by treating the coumarin residue with petroleum benzin, which entirely dissolves coumarin but leaves behind any acetanalide, which in its turn may be identified by its characteristic chemical tests and its melting point of 112° C.

While there is little that is new or original in the foregoing communication apart from the procedure directed for the examination of the sample where only a limited amount is available, it is offered as being of interest to many pharmacists who have neither the time nor opportunity to familiarize themselves with the analytical procedures described in works on food analysis but who would eagerly avail themselves of points offered in an article of this kind.

OREGON BALSAM.

O. A. BEATH AND L. E. SAYRE.

Since the time that Dowzard expressed his opinion that Oregon Balsam was a mixture of colophony and oil of turpentine, the question of its origin has been frequently asked.

Mr. Rabak, a pupil of Professor Kremer's, of the University of Wisconsin, undertook to determine the actual source of this oleoresin. His investigation proved quite conclusively that Oregon Balsam was collected from a species of fir or possibly several species. Samples of twigs and cones yielding this product were identified officially as *Pseudotsuga mucronata* (Sudworth) and, as to synonym, *Pseudotsuga Douglasii* (Carierre). For details concerning the examination of the resin, the author's paper must be consulted (Pharm. Rev., Aug., 1904, 293-299).

Further investigation was made by Mr. Beath in 1912 under the supervision of Professor Kremers. A sample was secured, accompanied with twigs and cones and was identified as belonging to the specie, *Pseudotsuga taxifolia.*

The oleoresin was obtained by wounding the body of the tree. It was milky white and had the same general appearance as a sample observed at the U. S. Forest Products Laboratory. This latter came from the Douglas Fir (*Pseudotsuga taxifolia*).

The following report is a summary of the analysis made by Mr. Rabak and Mr. Beath:

OLEORESIN.

	Oregon Balsam (commercial) (Rabak)	Abies amabilis (Rabak)	Pseudotsuga taxifolia, (Beath)
Sp. Gr.	0.985	0.969	.....
(a)D	+2° 30′	0	+1.48°
Acid No.	103	44	100
Color	Pale yellow	Pale yellow	Milky appearance*

VOLATILE OIL.

Yield	25%	40%	15% ?
Sp. Gr.	0.882	0.852	0.8705
(a)D	—34° .37′	—12° .17′	—46° .47′

RESIN.

(a)D	.....	0	+19° 6′
Acid No.	.....	70	129

During the past year, the investigation has been carried on by Mr. Beath, who, with the aid of the Department of Pharmacy in matters of correspondence, etc., has led to a further penetration of the subject and has added somewhat to the material formerly contributed. Through the firm of Faxon & Gallagher, of Kansas City, communication was affected with persons and firms whose correspondence is appended to this article.

The object was to collect as many samples of Oregon Balsam as possible, accompanied with as much information as could be secured.

The following firms were written to relative to information as to the purchasing of Oregon Balsam at first hand:

Oregon Wood Distilling Co., Linnton, Oregon; D. M. Dunn Co., Portland Oregon; Heitshu, Grant & Co., Portland, Oregon; Fisher, Thorsen & Co., Portland, Oregon; W. P. Fuller Co., Portland, Oregon; Rasmussen & Co., Portland, Oregon; Blumauer-Frank Co., Portland, Oregon; Stewart & Holmes Drug Co., Seattle, Washington; Lehn & Fink Drug Co., New York City; National Aniline Co., New York City; McKesson & Robbins, New York City.

The following are excerpts from the various answers received:

"* * * Regret that it is impossible for us to give you the exact knowledge you require, as we have been endeavoring to secure this information for some time, especially on account of the present price in this market for Oregon Balsam which is $2.00 per gallon.

"MCKESSON & ROBBINS."

"* * * In reply would state that we are very large handlers of this article and have a shipment now on the way from the Pacific Coast. At the present time, however, this market

*Sample of Douglas fir (*Pseudotsuga taxifolia*) observed at the Forest Products Laboratory had the same appearance as that of the sample examined.

is pretty bare of this article, and the only holder of same is asking about $2.00 per gallon. Our price to arrive is $1.25 per gallon, in barrels, and $1.35 per gallon, in cans.

"We have made inquiries of a number of Oregon jobbers, but none of them are in a position to offer us any, and it was only by accident that we ran across a holder of the article. * * * NATIONAL ANILINE & CHEMICAL CO."

" * * * wish to advise you that any of the wholesale druggists in the states of Washington and Oregon will be able to furnish the information required by you. LEHN & FINK."

" * * * if you will kindly refer your inquiry to—

"Oregon Wood Distilling Co., Linnton, Oregon;
"D M Dunn Company, Portland, Oregon;
"Heitshu Grant Co., Portland, Oregon;
"Fisher Thorsen Co., Portland, Oregon;
"W. P. Fuller Co., Portland, Oregon;
"Rasmussen & Co., Portland, Oregon,

"no doubt you will gather information and prices from some of these sources.
"BLUMAUER-FRANK DRUG COMPANY."

" * * * Oregon Fir Balsam applies to the Northwest, as this section in early years was known as Oregon. We buy all of our Fir Balsam locally and could supply you with any quantity you require. We assume from the tenor of your letter, however, that you would only desire a small quantity, which would amount to very little, as it is cheap.
"STEWART & HOLMES DRUG CO."

" * * * as we do not carry this material, have referred your letter to the Oregon Wood Distilling Co., of this city, who will no doubt be able to fill your requirements.
"RASMUSSEN & CO."

" * * * We have today sent you by mail ¼ lb. of Fir Balsam in compliance with yours of the 24th. Please accept with our compliments. STEWART & HOLMES DRUG CO."

" * * * have to advise that we do not handle the Oregon Balsam Fir mentioned, and have taken the liberty of referring the inquiry to the Oregon Wood Distilling Co., who have a plant near this city, and we believe are in position to supply goods of this character.
"W. P. FULLER & CO."

" * * * we are mailing you under separate cover, a sample of Oregon Balsam Fir. Please examine this sample and let us know in what quantity you can use same. On receipt of your reply, we will quote prices. FISHER, THORSEN & CO."

" * * * In respect to Oregon Balsam Fir will state that the inclemency of the weather has made it impossible for the gatherers to get any of this article for the last two months and there has been positively a veritable famine on this product, the demand far exceeding the supply, and for that reason the price is now $30.00 a barrel, f. o. b. shipping point. It will be impossible for us to guarantee delivery but expect to have some Balsam in the course of the next week or so, at which time we will advise you definitely. HEITSHU GRANT & CO."

It will be noted that several of the letters received have indicated that the Oregon Wood Distilling Company should be able to furnish a satisfactory explanation as to where Oregon Balsam could be secured first hand. This company did not make any reply to our inquiry and as a consequence, our report lacks the testimony of a firm purported to produce Oregon Balsam commercially.

The attempt to settle the origin of Oregon Balsam has involved considerable time and patience, as is the case of all subjects of this class. There seems to be a trade secret connected with it that is not easy to penetrate. For over twenty years, the subject has been one of considerable interest. It would appear that practically all that could be said about its origin has been written. To advance the investigation the thing remaining to be done was to fathom the source of supply by coming into direct contact with the producers of the article. While the author has not been able to do this, he has endeavored to keep the subject alive, hoping by this means to multiply the inquiries into the problem, believing that if a persistent effort is kept up in the direction indicated, the final solution as to the actual source of Oregon Balsam will finally be reached. The present inquiry, however, has only given results relating to Oregon Balsam as furnished in the Kansas market of today and the results of correspondence. The aim being to secure, if possible, information leading up to the original source of the article in question.

HOW MUCH SHOULD COMPRESSED TABLETS VARY IN WEIGHT?

C. H. BRIGGS.

In the manufacture of compressed tablets it is impossible to make every tablet of any particular lot weigh exactly the same as every other tablet. It is quite possible that a drug decision may be issued which will fix a legal standard for the maximum amount of variation which is allowable in the weight of compressed tablets, and the question naturally arises, How much variation should be allowable?

Before going into a discussion of the variation in the weight of tablets, I would first call your attention to the other methods of dispensing medicines in order that we may compare the variation in the individual doses by these methods with the variation in individual tablets.

The several methods of dispensing medicines are quite familiar to all of us. They may be classified roughly as powders, liquids, gelatine capsules, pills and tablets.

Powders.—In the early recollection of the writer, there is a very vivid picture of the family doctor seated at a table and preparing powders by measuring out portions from several bottles by means of his pen knife or spatula. As to the accuracy of this method of putting up prescriptions, there can be little doubt that there were great variations in the amounts of the different ingredients,—variations amounting to 100 percent. or more. It is to be hoped that this practice has entirely gone out of vogue and that the modern physician uses more accurate methods for dispensing.

The usual method of preparing powders in the drug store consists of spreading out the properly weighed and mixed material as evenly as possible and dividing it into the requisite number of powders with the spatula. Is there any druggist present who is willing to guarantee that the powders prepared in his pharmacy by this method will not vary more than 10 percent., or even 20 percent. in weight? And yet this is the approved method of dispensing powders.

Liquids.—The two principal methods of giving liquids is by teaspoonfuls and by drops. How much variation do you suppose there is in teaspoonfuls as measured by different individuals, or even by the same individual at different times? It is safe to say that one man's conception of a teaspoonful may be twice that of another. A test carried out by the writer to determine the variation in a teaspoonful of water as measured by ten different persons using the same teaspoon showed a variation of 71 percent. A still larger variation might be expected if different teaspoons were used.

The other method of dispensing liquids, by drops, is used for more concentrated and more active solutions. It might naturally be expected that this method of dispensing would be very accurate, and yet we all know that there is a big variation in the size of drops. The size of a standard drop has been well defined. However the difficulties of specifying and preparing a dropper that would deliver

a standard drop were so many that the Committee of Revision of the U. S. Pharmacopoeia has refused to recognize a standard dropper.

The size of a drop depends on the consistence of the liquid and size and kind of surface from which it is dropped. A pipette with a large opening will deliver twice as much water to the drop as one with a small opening. Here then again we have another variation of 100 percent. in this means of dispensing liquids.

Capsules.—Happy is the druggist who has a prescription to fill calling for capsules for these do not vary in size. He has only to weigh out the proper amount of material and fill it into the proper number of capsules. But, alas! he must divide the powder as before in the case of dispensing powders or he must fill the capsules full until the material is all used, and guess at the amount in each. Have you ever weighed the contents of ten capsules put up in your store and noted the variation in the weight of individual capsules? Don't do it. Send a prescription for capsules to your nearest competitor and weigh ten of his capsules individually, and then you will have something to talk about.

But enough of powders, liquids and capsules. How about the variation in the weight of compressed tablets? Here the pharmacist can be excused from responsibility for the accurate weight of these rests largely with the pharmaceutical manufacturers who make the bulk of all pills and tablets.

Tablets can be divided into two classes according to the method of manufacture; namely, compressed tablets and tablet triturates. The several steps in the manufacture of compressed tablets are, first, the milling and mixing of the various ingredients until the mixture is entirely uniform; second, the conversion of the powdered material into fine granules that will feed properly in the machines; third, the compressing of the granulated material into tablets by the tablet machines. The last step is the one that controls the size of the tablets. The tablet machine first measures a quantity of the granulation and this is then compressed into a tablet by a punch and die. The size of the tablets can be controlled readily by the operator by regulating the size of the measuring chamber, but the variation in the weight of the individual tablets depends on the accuracy with which the machine measures the granulation and the uniformity of the latter.

In preparing a lot of tablets, the operator first adjusts his machine until it will deliver ten or twenty tablets that will weigh exactly the required number of grains. He is then ready to run out the whole lot, but it is quite necessary that samples be taken at frequent intervals and the weight checked, in order to see that the machine stays properly adjusted. If at the end of the operation the tablets be counted and the actual yield be compared with the theoretical, the amount of variation can be calculated. In looking over the records for several large lots of tablets taken at random from our files, the writer finds a variation of two per cent. or less from the theoretical yield. On one lot the material for 2,000,000 tablets was made into 2,002,594 tablets, while another lot of material for 3,000,000 tablets actually gave 3,010,404, which is a variation of 0.1 percent and 0.3 percent. respectively.

When we compare the accuracy with which this material has been divided into the required number of doses with the crudeness with which a thousand gallon

lot of elixir gets divided into the required number of doses by the many consumers, the slight variation in the yield of the tablets is entirely lost sight of.

Now let us consider the variation in the weight of the individual tablets themselves. It would be an endless and entirely impracticable task to attempt to weigh individually all of any large lot of tablets. Ten tabets were taken at random from each of ten different lots that had been made by different machines and the tablets were weighed separately. The maximum variation was found to be nine percent. from the average, and only seven tablets in the hundred to vary more than five percent. from the average. This variation is certainly very much less than with any of the other methods of dispensing medicines. Does it not seem, therefore, that an occasional variation of 10 percent. or even 15 percent. in the weight of one tablet from the average weight of 100 tablets should be legally allowable? Such a variation would be considered small by the other methods of administering medicines.

In conclusion the writer wishes to emphasize the following:

1st. That the methods of dispensing powders, liquids, and capsules present wide variations in the individual doses.

2nd. That tablets are by far the most accurate means of dispensing medicine.

3rd. That the average weight of a large number of tablets should contain the exact amount of the ingredients claimed by the label.

4th. That a permitted variation of 10 percent. or 15 percent. in the weight of individual tablets would not be excessive as a legal standard.

FROM THE LABORATORIES OF PARKE, DAVIS & CO., DETROIT, MICH., JULY 12, 1913.

CUNILA MARIANA L., A SUBSTITUTE FOR SPIGELIA.

W. W. STOCKBERGER, WASHINGTON, D. C.

During the last few months several crude drug dealers have submitted to the writer for verification commercial samples representing recent shipments of what was supposed to be pinkroot. Upon examination the larger number of these samples proved to be spurious. The sophistication, however, was not Ruellia, the usual adulterant, but a new one which was identified as *Cunila Mariana* L.

Virginia is given as the type locality of this plant, known locally as American, mountain, or Maryland dittany, but it is found also in the Ohio valley and the States bordering on the Southern Appalachians. It is of interest to note that within its range of distribution are included those areas in which both *Spigelia marilandica* and *Ruellia ciliosa* are most abundant.

By the gross characters of its roots Cunila may be readily distinguished from Spigelia. The dry roots of the latter are very friable and break readily with a fairly smooth and usually whitish fracture, while roots of Cunila do not break readily but when sharply bent the cortex splits off from the tough woody part in a manner strongly suggestive of Ruellia. The microscopical characters of the root as seen in cross section readily differentiate Cunila from both Spigelia and

Ruellia, but further mention of them is unnecessary since good descriptions of the anatomy of all three plants are readily available in the literature.[1]

An effort was made to trace the source which supplied this new substitute, but aside from the mere statement that a large shipment from Kentucky had reached the crude drug markets of the East, nothing was learned. It is probable, however, that more of this root will be collected and marketed and it may be possible eventually to determine the exact locality in which it is being collected.

It is an open question whether the wholesale adulteration of pinkroot which has been so much in evidence during recent years is due to carelessness, ignorance or cupidity on the part of the collectors. Manufacturers using this drug certainly can not afford to jeopardize the purity of their preparations by using the false or adulterated pinkroot, and a concerted effort to drive the spurious drug out of the markets is highly desirable.

Some definite results might follow if the large dealers in pinkroot were to furnish to local buyers for distribution among collectors, a leaflet containing a good picture of the spigelia plant and a warning against the unsatsifactory methods of collection so frequently pursued.

THE COMMERCIAL POSSIBILITIES IN GROWING MEDICINAL PLANTS.

F. A. MILLER, M. S., INDIANAPOLIS.

The commercial possibilities in growing medicinal plants are now recognized by the governments of England, Austria and the United States. The International Congress of Applied Chemistry, a society whose able efforts toward industrial development are now universally recognized, is taking active steps in the investigation of drug plant cultivation through an international committee. Universities, private institutions, and individuals have been induced to broaden their field of investigations to include medicinal plants.

From scattered, disconnected and poorly planned investigations of a minor character this work is gradually being organized with a determination that insures success. The dignity with which this movement is now being advanced removes all chances for doubt as to the practical value of drug growing. The success of such an undertaking will of necessity depend upon the commercial possibilities presented. The work in the United States has now reached a stage where these possibilities must be carefully considered.

The early history and evolution of the cultivation of medicinal plants within the U. S. and other countries has been treated elsewhere in an able manner by several authorities and need not be repeated here. It might be well to add, however, that most of the early work on drug growing was not exhaustive. It gave

---

[1]Holm, Th., Medicinal Plants of North America, No. 5. *Cunila Mariana* L. Merck's Report, vol. 16, pp. 188-189, 1907.

Stockberger, W. W., Pinkroot and Its Substitutes, Pharmaceutical Review, vol. 25, pp. 2-21, 33-47, 66-84, 97-107, 1907.

Mansfield, W. M. Ruellia as a Spigelia Substitute. Druggists Circular, vol. 53, pp. 110-114. 1909.

us little in the way of methods and in the behavior of medicinal plants under varied conditions. With the exception of a few forms such as cinchona, coca, and opium, little was accomplished upon commercial productions and improvement. Of greater value to the progress of this work would be a careful interpretation of the progressive stages through which some of the valuable economic plants have passed in being brought to their present high state of development. Some of them are as old in cultivation as history itself. Still they are subject to improvement and, rich as some of them are in established varieties, other more valuable ones are being discovered and isolated which surpass their parents in many characteristics. Instead of attempting to solve the more practical phases of the question of drug growing as has been done in modern agriculture we have been busy suggesting long cumbersome lists of probable forms for cultivation and repeating antiquated methods of collecting, curing and packing which are of little practical value and have been handed down from early generations rather than evolved from actual investigations. The methods used have been in opposition to the principles of agriculture. No improved varieties of known cultural requirements were at hand and little effort has been made to produce them. The behavior of active principles under varied soil and climate conditions are imperfectly understood. Supplies of authentic seeds and plants of the more valuable forms are either unknown or extremely rare. And finally the greater number of requests for information upon the commercial possibilities of drug cultivation are from people not versed in the requirements of crude drugs. Not only are they deficient in this respect but they usually have a false impression as to the profits to be derived from such an undertaking. It is in this respect that the greatest care must be exercised in order that the interest now aroused may not be lost through an exaggeration of commerical possibilities. This has already been done to a certain extent and a portion of the recent literature dealing with this phase of drug growing invites discussion and some friendly criticism. The time is now current for the accumulation of practical data and its circulation under the most conservative and carefully guarded statements. There is a demand for information bearing directly upon immediate possibilities in drug growing. This demand should be met by information based upon actual practice and not upon theory and supposition. If this is impossible then a clear confession of our ignorance upon the subject should be in order.

The unfortunate error of one investigator in calculating the productivity of digitalis should serve as a caution to all those engaged in experimental drug growing. The estimated return of 4,606 dollars per acre was sufficiently attractive to engage the immediate attention of the daily press and of prominent trade journals. It created no little feeling and enthusiasm among florists by appearing in one of their most popular journals. This publication is noted for its practical information upon plant culture and is read almost exclusively by commercial growers. In view of the difficulties to be overcome in establishing drug growing it is unfortunate that information of this kind should find its way to practical men. The yield of 100 pounds produced upon 1,120 square feet as given by Prof. Newcomb does not differ greatly from that obtained by myself which was 101 pounds upon 1,089 square feet for Digitalis gloxinioides. This form is probably one of the heaviest producers of the purpurea strains and would not be repre-

sentative for the official purpurea. The yield of 101 pounds was also obtained from 80 percent of the maximum number of plants which could be accommodated upon this size plot. This is probably a more nearly perfect stand than could be obtained upon a large scale where an acre or more was involved. That it would not be safe to calculate even the yield alone upon a basis of the above figures is indicated by the fact that only 288 pounds were obtained from one-fourth acre planted with a mixture of several varieties of the purpurea strains.

Kraemer in his fourth edition of Botany and Pharmacognosy includes a brief chapter of thirteen pages upon the cultivation of medicinal plants. However brief this chapter may appear there are over seven pages of the thirteen which are devoted strictly to plant names, both common and technical and including probably three hundred different species. The practical value of the publication of such a list in a general chapter upon drug cultivation is in doubt when we consider the very questionable virtue of many of the drugs mentioned. The great majority of these lesser important and questionable drugs are not only still abundant in the wild state but are marketed at extremely low prices and are used by pharmaceutical manufacturers in very small amounts. These conditions together with the growing tendency of the medical profession to reduce the number of drugs used would seem to justify the elimination of many of them from publications supposed to serve a practical purpose. It is said that the average practitioner will use less than twenty vegetable drugs. A few who may be called exceptions and those not of the modern school of medicine may use as many as thirty or forty. Even this liberal figure, however, would not seem to demand a list of three hundred or more as a matter of choice. In number alone such lists as those of Kraemer and of Schneider in "Pharmacal Plants and Their Culture" might serve to suppress, rather than arouse interest in drug growing. They not only seem discouraging in this respect but are also confusing and impractical. In "Pharmacal Plants and Their Culture," page 10, the author states that there is no plausible reason why such common but nevertheless very desirable drugs as taraxacum, chicory, mallow, burdock, horehound, milk weed, sambucus, stramonium, rosemary, and many others, should not be very profitably cultivated on a large scale. If cultivated upon a large scale and at the same time profitably these drugs must be held in considerable demand by pharmaceutical manufacturers. This condition certainly does not exist for more than two or three and probably not for more than one of the forms mentioned. Little difficulty has been experienced during the past years in obtaining sufficient quantities of such drugs at very moderate prices. The same is true for a large number of plants mentioned in the latter part of the same publication. This is given up to brief notes upon eight hundred and sixty-nine forms, classified as medicinal and poisonous. It is believed that for all practical purposes at least eight hundred of these forms might well be omitted.

Turning to another phase of the situation it has been found that doubtful comparisons have been made of American grown and foreign drugs. Some of these comparisons have been decidedly too liberal in certain important instances. The production of Cannabis Indica in the United States furnishes an example. The advancing price of the foreign drug has made it desirable that the United States produce its own supply. This appeared to be one of the easiest problems in drug

growing, especially in view of the statements of several authorities. These statements are to the effect that American grown cannabis is equally as active physiologically as the imported drug. These broad statements together with requests for the home grown drug have undoubtedly had a stimulating effect upon its production. Few cultural difficulties were encountered and consequently many samples of the drug soon found their way from one part of the country to another. An examination of many of these samples has failed to substantiate the statements of the above authorities. In many instances the samples were also very inferior from a physicial standpoint. Samples of this drug produced by the United States Department of Agriculture in South Carolina which so far seem to represent the best American grown product, have tested 75 percent as active as good imported drug. Drug produced in Indiana from foreign seed does not test over 65 percent when compared with the drug from which the seeds were taken and some test as low as 40 percent. In view of this situation it does not seem fair to commercial interests to recommend at this time the raising of this drug upon a large scale. It has also been found that belladonna varies greatly in percentage of alkaloids when grown in this country, and it is very probable that many sections of the country will not be suitable for its commercial production. The possibility of using the entire herb instead of the leaves in an effort to simplify its commercial production may be questionable in view of the great difference in the alkaloidal content of these parts. Samples taken from the same plot assayed as follows: leaves 0.445 percent, leaves and stems 0.300 percent, stems 0.065 percent.

Information in the form of cultural directions may also be made too general. As late as May 10th a request was received for information upon the planting of one acre of digitalis. The impression had been gained that this drug could be started by open field sowing on or about this date. Such cultural directions for digitalis have been published from reliable sources upon two occasions and may or may not have been responsible for this impression. However, it should be generally recognized among investigators that digitalis is not a plant that can be propagated upon a large scale by this method. The same may be said of henbane a drug that is probably in greater need of cultivation and improvement than any other. Immediate results would be very desirable at this time when the quality of the imported supply is extremely poor and the botanical source of the drug is questionable. Repeated failures with the commercial production of this drug have been experienced in England and still the technical difficulties of its cultivation have not been overcome. Such instructions as those of Turner, Pharmaceutical Journal, 86, 390, to the effect that henbane is not difficult to grow where the grower has a knowledge of general agriculture and Farwell, Bulletin of Pharmacy, 19, 258, that belladonna, henbane, digitalis and aconite can be grown as easily as a field of potatoes are somewhat too general for application. The cultivation of henbane in this country upon an experimental scale has resulted in such complete failure that efforts to continue its investigation have been almost abandoned. I do not agree with Schneider that from a cultural standpoint it can be associated with stramonium, cannabis, tobacco, and belladonna or that to make the culture profitable, only the flowering herb must be used. In the first place the culture of stramonium, cannabis and tobacco are ex-

tremely simple and the propagation of belladonna now fairly well developed. Much difficulty has been experienced, however, in the seeding and transplanting of henbane and in the elimination of insects from the growing plants. In the second place it is extremely doubtful whether any binennial forms can be grown profitably in this country if the second year product is demanded. In my estimation such a demand cannot be based upon strictly economic and scientific principles. The henbane situation for the past three years has demonstrated that conditions may arise which will make it not only advisable but probably necessary to pursue a vigorous search for pharmacopœial substitutes. I have demonstrated repeatedly that much of the commercial henbane is not from Hyoscyamus niger of the second year's growth and further-more first year leaves of biennial henbane have been tested which yielded 0.089 percent of alkaloids. This figure is only suggestive but should be an incentive to further investigations upon the production of an annual crop of this drug. As yet however, the uncertainty of the plant under cultivation does not warrant an attempt at commercial productions. The experimental stage has not been passed, and so long as this condition exists little can be said for prospective growers in the nature of direct and specific recommendations.

The foregoing conditions apply not only to henbane but in my estimation to most of the important drug plants now under investigation within the United States. The mere fact that a form is grown experimentally or for garden or decorative purposes does not signify that it can be produced successfully upon a commercial scale. The production of a few specimen plants does not involve field conditions and is no indication of the ease and rapidity with which the same form may be grown commerically. Commercial possibilities have been suggested upon these grounds and the much talked of "profit in weeds" has resulted in more talk than profit. It is now time to reduce the work on drug cultivation to an exact science, and to determine the commercial possibilities of the most promising forms in the same manner as has been done for agricultural and other economic forms. When this has been accomplished there will be ample time for recommendations to practical growers. Until then all inquiries should be met with a clear statement of the uncertainty of immediate commercial possibilities together with an idea of the exacting nature of the requirements for the various classes of medicinal plants.

BOTANICAL DEPARTMENT, ELI LILLY & COMPANY, INDIANAPOLIS, Aug. 4, 1913.

A BIBLIOGRAPHY OF THE DETERIORATION OF DRUGS AND PHARMACEUTICAL PRODUCTS.

E. G. EBERHARDT AND F. R. ELDRED, INDIANAPOLIS, IND.

The term deterioration is here restricted to the decrease of therapeutic value by decomposition or loss of active constituents. It is only in recent years that the matter of the deterioration of drugs and their preparations has received any considerable attention. At least practically all of the systematic work on the subject is of comparatively recent date. The older results were mostly inci-

dental to work along related lines, principally that of standardization. A study of the subject discloses the need of accurate and decisive work as there is still much of uncertainty and diversity of opinion. The importance of the subject and the great advances made in the matter of standardization justifies the hope that the near future will see a marked increase of our knowledge in this field.

We do not presume to offer this as a complete bibliography of the subject, but we have tried in the time at our disposal to make it sufficiently so to give a very fair review of the field. Many references could be seen in abstract only but were considered definite enough to merit inclusion.

It is our purpose to continue the bibliography and to publish additional references after a sufficient interval.

Aconite, The Assay of,—A. B. Stevens,—Bull. Phar., 1911, Vol. 25, p. 237. Also Phar. Jr., Vol. 87, p. 33.
Properly kept the drug does not deteriorate. Chemical assay will detect deterioration.

Aconite, The Effects of Medicinal Doses of, upon the Pulse Rate,—R. D. Rudolph and E. C. Cole,—Am. Jr. Med. Sci., 1912, Vol. 144, p. 788.
Tinctures on the market are usually inert. A large loss of activity observed in aconitine solution in four months.

Alkaloidal Extracts, The Stability of,—H. M. Webster,—Chem. Drugg., 1908, No. 1487, p. 172, through Chem. Absts. Vol. 2, p. 2969; also Proc. A. Ph. A. Vol. 57, p. 73.
Difference found in extracts after two to twenty-five years did not exceed limits of experimental error.

Alkaloidal Fluidextracts and Tinctures, On the Permanence of,—W. L. Scoville,—Proc. Am. Ph. Assn., 1910, Vol. 58, p. 874.
A series of preparations was assayed at intervals of three months during one year. Tabulated results are given.

Alkaloidal Stability of Certain Standardized Preparations of the Br. Pharmacopœia,—W. A. H. Naylor and C. Huxtable,—Pharm. Jr., 1902, Vol. 69, p. 134.
Show from 1% to 5% of depreciation in eight months.

Alkaloidal Tinctures, Stability of,—Farr and Wright,—Phar. Jr., 1894, p. 123, through Proc. A. Ph. A., Vol. 43, p. 622.
The only notable loss observed was in tinctures cinchona and green hellebore and then not exceeding 5% average.

Astringent Preparations, Permanence of,—Wilbur L. Scoville,—Jr. A. Ph. A., 1912, Vol. 1, p. 334.
Tannin estimation made in the fluidextracts of a number of drugs at intervals during the three years show marked changes.

Belladonna Leaves, The Quality of,—A. B. Lyons,—Proc. A. Ph. A., 1886, Vol. 34, p. 110.
Concludes that leaf kept in pressed packages for several years shows no evidence of loss.

Belladonna Extract, Keeping Qualities of,—Holger Thaysen,—Schweiz. Wochschr., Vol. 50, p. 605; also Apoth. Ztg., 1912, p. 528; through Chem. Absts. Vol. 7, p. 681.
Alkaloids remain unchanged.

Calcium Sulphide Pills and Tablets,—M. R. Schmidt & H. Engelhardt,—Proc. A. Ph. A., 1910. Vol. 58, p. 1005.
No noticeable deterioration in three year old preparations.

Cannabis Indica, Notes on,—E. M. Holmes,—Phar. Jr. 1902. Vol. 68, p. 342.
Suggests advisability of storing as tincture instead of the drug, to avoid deterioration.

Cannabis Indica and its Galenical Preparations, Physiological Assay of, with Notes on some of the Commercial Products Supposed to Represent the Active Principles of the Drug.—L. W. Famulener and A. B. Lyons.—Proc. A. Ph. A., 1903. Vol. 51, p. 240.
The drug loses activity especially when powdered, likewise the powd. ext. The solid and fluidextracts are permanent.

Cherry-Laurel Water, The Stability of,—H. Ribaut,—Bull. Sci. Pharmacol. Vol. 17, p. 583; through Chem. Absts. Vol. 5, p. 2895.
HC.N. content decreases irregularly with time.

Cinchona, Note on the Use of Fl. Ext., for Making Wine of Cinchona,—G. Allard & A. Nourrisson,—Jr. Pharm. Chim. Series 7, Vol. 6, p. 21; through Chem. Absts. Vol. 7, p. 1260.
The alkaloidal strength of the fluid extract diminishes with time.

Coca Leaves, Notes on the Alkaloids of,—A. B. Lyons,—Am. Jr. Phar., 1885. Vol. 57, p. 466.
States the leaves rapidly deteriorate.

Coca, A Lecture on, delivered at the Phil. Coll. Pharm., Dec. 1, 1887, by H. H. Rusby,—Am. Jr. Phar., 1888. Vol. 60, p. 199.
Attention is called to the changes occurring during importation.

Coca and Cocaine Studied Historically,—Sharpe,—Pharm. Jr. Vol. 82, p. 185.
The drug is readily affected by dampness and rendered inert.

Commercial Crude Drugs, The Variation in Activity of,—F. H. Carr & W. C. Reynolds,—Pharm. Jr., 1908. Vol. 80, p. 543.
Attention is called to the influence of enzymes, in many cases causing loss of activity.

Digitalis, Activity of Leaves and Stability and Standardization of Tinctures,—Gordon Sharp and F. W. Branson,—Phar. Jr., 1912. Vol. 59, pp. 131, 173. (Abst.) Jr. A. Ph. A. Vol. 1, p. 1431.
Of a number of tinctures, part were found deteriorated at 20 months and nearly all after 28 months.

Digitalis and Ergot Preparations, Reliability of,—Jr. Am. Med. Assn., 1912. Vol. 58., p. 705
Editorial advocating dating of the preparations named.

Digitalis and Its Preparations, Deterioration of,—Drug. Cir., 1912. Vol. 56, p. 737.
Answer to a query.

Digitalis and Its Preparations, The Keeping Properties of,—Jr. Am. Med. Assn., 1913, Vol. 61, p. 202.—Editorial.

Digitalis and Some of Its Preparations, Observations on the Keeping Properties of,—R. A. Hatcher & C. Eggleston,—Jr. Am. Pharm. Assn., 1913. Vol. II, p. 876, also Am. Jr. Phar. Vol. 85, p. 203.
Leaves of good quality in many instances do not deteriorate with age. When they do it is with exceeding slowness. The same is true of preparations containing 50% or more of alcohol.

Digitalisblätter, Die Physiologische Wertbestimmung der,—Dr. C. Focke,—Arch. d. Pharm., 1903. Vol. 24, p. 128.
Moisture and air are the prime factors causing deterioration.

Digitalisblätter, Wertbestimmung der,—H. Ziegenbein,—Arch. der. Pharm., 1902. Vol. 240, p. 454.
Activity is reduced by storage for several years, 40% to 60%.

Digitalis, Factors Relating to the Standardization of,—Worth Hale,—Proc. Am. Ph. Assn., 1909. Vol. 57, p. 769.
The paper discusses in a general way the variability of the drug and its preparations.

Digitalis, Infusion of, Deterioration dependent on Acidity,—J. Löwy,—Phar. Ztg., 1906. Vol. 51, p. 1074; through Proc. A. Ph. A. Vol. 55, p. 663.
Infusion loses half its activity in 24 hours at room temperature. Neutralization prevents the change.

Digitalis, Infusion of, Preservative Effect of Small Percentages of Alcohol,—C. Focke,—Pharm. Ztg., 1909. Vol. 54, p. 757; through Proc. A. Ph. A. Vol. 58, p. 90.
5% alcohol renders it stable within reasonable limits, with 10% alcohol deterioration in nine months is not over 5 to 10%.

Digitalis, The Alteration of Infusions of, through the action of Micro-organisms and the Preservation of Infusions.—A. Hoger,—Giorn. Farm. Chem. Vol. 61, p. 19; through Chem. Absts., 1912. Vol. 6, p. 913.
Addition of 5% alcohol acts as a preservative and does not impair activity.

Digitalis, Its Cultivation, Collection and Preparation,—Edwin L. Newcomb,—Am. Jr. Ph., 1912. Vol. 84, p. 201.
Reviews opinions as to influence of drying on preventing deterioration.

Digitalis, Keeping Properties of,—Brissemoret & Joanin, —Jr. Pharm. Els-Lothr., 1911, p. 221; through (abst.) Phar. Era, 1912. Vol. 45, p. 13.
Dried leaves kept their activity for 8 to 11 years. Tincture begins to deteriorate after 13 months and is nearly worthless after 15 months.

Digitalis Leaves, Value of Air-tight Preservation,—Caesar and Loretz,—Phar. Ztg., 1904. Vol. 49, p. 791; through Proc. A. Ph. A. Vol. 53, p. 630.
Preserved unimpaired for one year.

Digitalis, Method of Collection, Preservation and Dispensing,—A. Wolff,—Phar. Zentralh., 1903. Vol. 44, p. 585; through Proc. A. Ph. A. Vol. 52, p. 659.
It is suggested the thoroughly dried and powdered drug be preserved compressed in tablet form, protected from air.

Digitalis Powder, Commercial, and Its Preservation,—A. Joanin,—Bull. Sci. Pharmacolog. Vol. 17, p. 707; through Chem. Absts., 1911. Vol. 5, p. 3717; also Proc. A. Ph. A. Vol. 59. p. 181.
The drug should be dried so as to contain not over 2% of moisture, powdered and kept protected from moisture.

Digitalis Preparations, Are Druggists Paying Attention to Deterioration of,—Jr. A. Ph. A. Vol. 1, p. 1453.
A communication to the Editor by Wm. Gray.

Digitalis Preparations, On the Importance of Determining the Potency of,—Joseph H. Pratt, —Bost. Med. & Surg. Jr., 1910, Vol. 163, p. 279.
A review of clinical and experimental evidence showing wide variations of activity in different samples.

Digitalis Preparations, The Efficiency of,—Med. Rec., 1907, Vol. 71, p. 356.
Editorial.

Digitalis, Report of A. Ph. A. Committee on Drug Market,—Jr. Am. Phar. Assn., Vol. 1, p. 500.
Assays of powder over eighteen months old showed no appreciable change.

Digitalis, Some Points as to Time of Gathering of the Leaves and the Keeping Properties and Standardization of the Tinctures, etc.—Gordon Sharp & J. Lancaster,—Phar. Jr., 1911, Vol. 86, p. 102.
Tincture begins to deteriorate after thirteen months. Leaves eight and eleven years old were still potent.

Digitalis, Standardization and the Variability of Crude and of Medicinal Preparations,—Worth Hale,—Bull. No. 74, Hygienic Lab., U. S. Public Health & Mar. Hosp. Service—1911.
A study of the drug and a number of its preparations as to potency and stability.

Digitalis, Strophanthus and Squill Preparations, Keeping Qualities of,—Alexander Goodall,—Phar. Jr., 1912, Vol. 89, p. 130; (abst.) Jr. Am. Ph. A., Vol. 1, p. 1435; also Am. Drug., Vol. 60, p. 353.
Tincture Digitalis was found to deteriorate after one year. Of samples of tinctures of strophanthus and squill some were found to deteriorate after three years.

Digitalis, The Physiological Activity of Acetic Fluidext. of,—Pearson,—Am. Jr. Ph., 1913, Vol. 85, p. 245.
The acetic menstruum quickly destroys potency.

Digitalis, The Physiological Standardization of, from the Point of View of the Pharmacist,—Robt. R. Hallaway,—Phar. Jr., 1909, Vol. 83, p. 801.
Concludes that six months is a safe time limit for the tincture.

Digitalis, The Variability of,—Hale,—Proc. Am. Ph. Assn., 1910, Vol. 58, p. 925.
Excessive drying of drug not required. Preparations seem to deteriorate little if made with 70% alcohol.

Digitalis, Tr., Its Potency and Keeping Properties,—Alexander Goodall,—Br. Med. Jr., 1912, Vol. I, p. 887; through Am. Jr. Med. Sci., Vol. 144, p. 299, 1912; also Chem. Absts., Vol. 7, p. 536.

Tinctures retain activity for about one year, after 18 months some are under standard, and after 22 months all of them.

Digitalis, Tincture of, Necessity of Protection from Light,—C. Focke,—Phar. Ztg., 1904, Vol. 49, p. 543; through Proc. A. Ph. A., Vol. 53, p. 599.

If kept in the dark deterioration amounts to 10% to 17%. If exposed to light, from 33% to 50% in one year.

Digitalis, Tincture,—Moran,—Med. Chronicle, 1911-12, Vol. 55, p. 1.

Tinctures tested from four to twenty years old. A tincture of Digitalis should retain its activity for two or three years. (Seen in reference only.)

Digitalis, Ueber die Bestimmung des Pharmakologischen Wirkungswertes der Blätter von,—Arnold Holste,—Arch. Exp. Path., 1911, Vol. 66, p. 161.

No change apparent in relative activity after approximately one year.

Digitalis, Ueber den Wert der Frischen Fol., und ihre Konservierung,—M. Winckel,—Münch. Med. Wochenschr., 1911, Vol. 58, p. 575.

Permanence is claimed for powdered drug in tablet form, prepared by preventing the action of enzymes in the fresh leaf.

Diluted Hydrocyanic Acid, The Deterioration of,—Virgil Coblentz and Otto May,—Proc. Am. Phar. Assn., 1908, Vol. 56, p. 879.

Experiments to determine the influence of light, alkali, acid, alcohol and acetanilid on decomposition.

Drug Deterioration—Texas State Jr. of Med., 1912, p. 159; through Jr. A. Ph. A. 1913, Vol. II, p. 82.

Editorial in support of dating preparations.

Drug Extracts of Various Kinds, Report of Committee of Pharm. Chemists Appointed for the Investigation of, to Determine their Rate of Deterioration. 1908.

A compilation of reports of investigations from a number of manufacturing laboratories.

Drug Extracts, Stability of,—A pamphlet containing report on deterioration from the laboratories of a number of manufacturing pharmacists,—1907-8.

Drugs, Short Notes on the Deterioration of, and Suggestions for the Prevention thereof,—J. S. Hill,—Phar. Jr., 1904, Vol. 72, p. 652.

Brief general discussion of agencies causing deterioration.

Drugs, Some Experiences in the Testing of, by Bio-Chemical Methods, with Special Reference to Digitalis, Squill and Strophanthus,—Wm. Martin,—Pharm. Jr., 1909, Vol. 83, p. 149.

Digitalis drug if properly prepared and stored, retains activity for many years and the tincture for nine or twelve months. Tinct. Squill begins to deteriorate sooner than digitalis, but the change is slower. Tinct. Strophanthus remains unimpaired for many years.

Drugs, The Bio-Chemical Standardization of,—W. E. Dixon and G. S. Haynes,—Proc. Therap. Soc., 1905; through Pharm. Jr., Vol. 75, p. 754.

The variability of commercial tinctures may be due to deterioration. Standard tinctures were unchanged after eight months.

Drugs, The deterioration of,—Jr. Am. Med. Assn., 1912, Vol. 59, p. 959.

Communication from the Council on Pharmacy and Chemistry of the A. M. A., recommending the dating of certain preparations.

Drugs, The Preservation of,—Linwood A. Brown,—Bull. No. 150, Ky. Agr. Exp. Sta. of the State Univ.

Discusses the storage of crude drugs and various pharmaceutical preparations.

Ergot,—R. Kobert,—Central. f. Gynäkol., 1886, Vol. X, p. 306.

Concludes that Ergot more than a year old has no action on the uterus. (Seen in reference only.)

Ergot,—Kehrer,—Arch. f. Exp. Path. u. Pharm., 1908, Vol. 58, p. 366.

Within one year the activity sinks to 1/7 of the original strength and in two years to 1/5. (Seen in reference only.)

Ergot, An Experimental Study of the Pharmacology of,—Wood & Hofer,—Arch. Int. Med., 1910, Vol. 6, p. 388.
A fluid extract exposed to air deteriorates extremely rapidly. Under the most favorable conditions the loss of strength approximates 10% a month.

Ergot; A Symposium,—Jr. Am. Phar. Assn., 1912, Vol. 1, p. 653.
A discussion of various phases of the subject at the meeting of the N. Y. Branch of the Am. Phar. Assn., May 13, 1912, by H. H. Rusby, C. E. Vanderkleed and Cornelius De Jonge.

Ergot, Enzymes in,—J. Schindelmeyer,—Apoth. Ztg., 1909, Vol. 24, p. 837; through Chem. Absts., Vol. 4, p. 1083; also Proc. A. P. A., Vol. 58, p. 157.
As complete and rapid drying prevents deterioration, this may be caused by enzymes, the presence of two being demonstrated.

Ergot, Experiments on Deterioration of,—Meulenhoff,—Nederl. Tijdschr. v. Pharm. (abst.) Phar. Rundsch., 1900, Vol. XXVI, pp. 738-772.
Believes that ergot under suitable conditions retains considerable activity for five years. (Seen in reference only.)

Ergot, How long does Liquid Extract of, Retain its Pharmacological Activity,—Phar. Jr., 1908, Vol. 80, p. 82.
By clinical trial no deterioration was apparent after one year. It is not necessary that ergot preparations be kept longer than twelve months.

Ergot, Intravenous Injection of,—Sollman and Brown,—Jr. Am. Med. Assn., 1905, Vol. 45, p. 229.
Comparisons were made of eleven different preparations of ergot, both fresh and old. Age of drug seems to make no difference.

Ergot; Its Production and Collection in Russia,—D. A. Ruffman and T. Maben,—Pharm. Jr., 1908, Vol. 80, p. 247.
Effect of age on ergot is discussed.

Ergot Preparations, A New and Reliable Method for the Preservation of,—Paul S. Pittinger and Chas. E. Vanderkleed,—Jr. Am. Phar. Assn., 1912, Vol. 1, p. 799.
Contact with air is the most potent cause of deterioration. A vacuum method of storage will preserve for a considerable time.

Ergot, Preservation of,—Dragendorff,—(abst.) Proc. Am. Phar. Assn., 1877, Vol. 25, p. 119.
The oxidation of the fat causes deterioration; would retain activity if fat were removed.

Ergot, Fluidext., Relative Strength of Fresh and Old Samples of,—C. C. Haskell and C. R. Eckler,—Jr. Am. Phar. Assn., 1912, Vol. 1, p. 412.
Properly kept fluid extract retains activity for two to two and one-half years, after which deterioration becomes apparent, amounting to 50% in four or five years.

Ergot, Stability of Pressed,—John Moss,—Yearbook of Phar., 1885, p. 410; through Proc. Am. Phar. Assn., 1886, Vol. 34, p. 371.
A sample of ergot, pressed to remove oil, retained its potency for six and one-half years.

Ergot, Stability of when Deprived of Fixed Oil,—Hermann Werner,—Phar. Ztg., 1881, p. 397; through Proc. Am. Phar. Assn., 1882, Vol. 30, p. 142.
Ergot so treated kept its virtues unimpaired for two years or more.

Ergot, Standardization of,—H. C. Wood and C. A. Hofer,—Univ. of Pa. Med. Bull., 1909, Vol. 21, p. 347.
Of twelve fluid extracts examined two were active. Both drug and fluid extract deteriorate rapidly.

Ergot, The Chemical Assay of Fluidextract of,—J. R. Rippetoe,—Am. Jr. Phar., 1910, Vol. 2, p. 119.
There is marked difference between fresh and old preparations.

Ergot and Its Fluidextracts, The Keeping Qualities of,—H. C. Wood, Jr.,—Am. Jr. Phar., 1911, Vol. 83, p. 172.
Fluidextract deteriorates rapidly, from 1.3% to 3.5% per week, according to conditions. Should not be kept longer than one year.

Ergot, The Physiological Standardization of,—C. W. Edmunds and Worth Hale,—Bull. No. 76, Hygienic Lab., U. S. Pub. Health and Mar. Hosp. Service, 1911.
Fluidextracts vary greatly. Preparations should be marked with date of manufacture.

Ergot, The Rate of Deterioration of Fluidext. of,—Wood.,—Proc. Am. Ph. Assn., 1910, Vol. 58, p. 883.
Fluidextract under the most favorable conditions loses 45% to 50% in the first year. Under unfavorable conditions the same loss occurs in three months.

Extracts, Belladonna and Henbane, Variation of Alkaloid on Keeping,—G. Ortlieb,—Phar. Ztg., 1903, p. 162; through Proc. Am. Phar. Assn., Vol.. 51, p. 621.
Alkaloidal value diminishes on keeping.

Extracts, Variation of Alkaloids in Some,—Jean Fricotel,—Bull. Sci. Pharmacolog., 1908, Vol. 15, p. 687; through Chem. Absts., Vol. 4, p. 234; also Proc. A. Ph. A., Vol. 57, p. 73.
Moist extracts show decrease in alkaloid after eight months in conium, belladonna, stramonium, opium and aconite.

Fluidextracts, Value of Glycerin as Solvent and Preservative,—Richard Firlas,—Apoth. Ztg., 1909, Vol. 24, p. 721; through Proc. Am. Phar. Assn., Vol. 58, p. 85.
Alkaloid diminishes more rapidly in fluidextracts made without glycerin.

Folia Belladonna, F. Hyoscyami u. F. Stramonii, Ueber die Aufbewahrungsdauer von,—R. Gaze,—Apoth. Ztg., 1912, p. 402; through Phar. Zentralh., Vol. 53, p. 1406.
The powdered drugs were kept in glass-stoppered bottles at room temperature and assayed at intervals during two years showing no loss.

Galenical Preparations Containing Alkaloids, Stability of,—Dohme & Engelhardt,—Proc. Am. Phar. Assn., 1910, Vol. 58, p. 782.
All fluidextracts tested keep their alkaloidal strength well, excepting those of coca and physostigma.

Galenical Preparations of the U. S. P., Detailed Investigations of Certain, with Special Reference to their Stability,—Dr. M. Clayton Thrush,—Pharm. Era, 1912, Vol. XLV, p. 750.
A general discussion of results obtained by others with conclusions by the author.

Galenical Preparations, The Stability of,—Dohme,—Am. Drug., 1909, Vol. 55, p. 37.
A number of products of various ages were assayed. No appreciable deterioration found except in powd. ext. physostigma, fluidextracts of coca and aconite and tincture aconite.

Galenicals, Deterioration of,—Phar. Era, 1912, Vol. 45, p. 741. Editorial.

Galenicals, The Potency and Keeping Properties of Some, as Determined by Physiological Tests,—Alexander Goodall,—Phar. Jr., 1912, Vol. 89, p. 130.
Tincture digitalis not reliable after one year. Tr. strophanthus retains activity at least three years. Tr. squill may deteriorate after two years.

Heart Tonics, The Pharmacological Assay of,—Houghton & Hamilton,—Proc. Am. Ph. Assn., 1909, Vol. 57, p. 773; also Am. Jr. Phar., Vol. 81, p. 461.
An investigation of the potency of preparations of digitalis, squill, convallaria and strophanthus, showing loss with age in digitalis.

Hydrastis, Ausscheidungen in Extractum Fluidum,—C. Linde,—Arch. d. Phar., 1898, Vol. 236, p. 698.
The precipitate deposited in fluidextract consists principally of berberin and hydrastin.

Hydrastis, Extractum, Fluidum,—Kunze,—Apoth. Ztg., Vol. 28, p. 223; through Chem. Absts., 1913, Vol. 7, p. 2089.
A specially prepared sample changed from 2.86% hydrastine to 2.19% in one year.

Hydrastis, Fluid Extract of,—L. Derlin,—Apoth. Ztg., Vol. 25, p. 190; also G. Fromme Ibid, Vol. 25, pp. 250, 274, 303; through Chem. Absts., Vol. 4, p. 1894.
The alkaloidal content of five samples out of six did not change more than .1% within six to twelve months.

Hydrogen Dioxide at Present on the Market, The Quality of Medicinal,—Kebler,—Proc. Am. Ph. Assn., 1910, Vol. 58, p. 903.
Investigation extending over one year showing progressive loss of strength.

Hydrogen Dioxide Solutions, Examination of,—L. F. Kebler, L. E. Warren and E. A. Ruddiman,—Bull. 150, Bu. Chem., U. S. Dept. Agriculture.

Hydrogen Peroxide,—C. B. Jordan,—Proc. Ind. Phar. Assn., 1912; also Jr. Am. Phar. Assn., Vol. 2, p. 344.
Shows result of keeping under various conditions.

Hydrogen, Peroxide of,—A. R. L. Dohme and H. Engelhardt,—Am. Jr. Phar., 1910, Vol. 82, p. 69.
Discusses various means of preservation.

Hydrogen, Peroxide of,—Pharm. Era, 1913, Vol. 46, p. 1.
Editorial discussion giving number of conclusions.

Hydrogen Peroxide, Preservation by Acetanilide and Time Sale Limit,—Ph. Era, 1913, Vol. 46, p. 12.
A symposium of replies to queries sent out by the Era.

Hydrogen Peroxide, Production, Past and Present,—J. S. Brewer,—Jr. Am. Phar. Assn., 1912, Vol. 1, p. 1002.
A general discussion of the subject.

Hydrogen Peroxide, Solution of, containing Acetanilide,—C. H. LaWall,—Am. Jr. Phar., 1906, Vol. 78, p. 582.
Calls attention to decomposition of acetanilide when used as preservative.

Hydrogen Peroxide Solution, Permanence and Acidity of,—L. W. Andrews,—Trans. Am. Inst., Chem. Eng., Vol. 2, p. 238; through Chem. Absts., 1911, Vol. 5, p. 759.
Samples of poor keeping qualities lose 10% to 50%.

Hydrogen Peroxide Sol., Reliability of the Commercial Sorts,—Robert C. Purcel,—Proc. Pa. Phar. Assn., 1912, p. 143; through Proc. Am. Phar. Assn., Vol. 51, p. 610.
Shows deterioration in 6 months on four samples.

Hydrogen Peroxide, The Preservation of,—J. H. Walton and R. C. Judd,—Orig. Com. 8th Int. Cong. Appl. Chem. (Appendix), Vol. 26, p. 621 (Abst.)
A study of the influence of various factors on decomposition.

Indian Hemp, Experiments on the Cause of the Loss of Activity of,—C. R. Marshall,—Phar. Jr., 1909, Vol. 82, p. 418.
Oxidation is the cause of loss of activity. Cannabis and preparations should be stored in hermetically sealed containers.

Ipecac, A Study of, and Review of its Literature,—R. R. D. Cline,—Southern Phar. Jr., Vol. 4, pp. 11 and 56.
If kept in a cool dry place the drug retains its activity. The pharmaceutical preparations often deteriorate enormously.

Ipecac, Ext. Liquidum, B. P.,—J. W. Thompson,—Phar. Jr., 1900, Vol. 64, p. 54.
Finds liquid extract unchanged after 6 and 7 months.

Ipecacuanha, Stability of the B. P. Liquid Extract,—H. Wippell Gadd,—Chem. and Drug., 1901, p. 21; through Proc. Am. Phar. Assn., Vol. 49, p. 574.
The assay remains unchanged after four months in liquid extract, wine and vinegar of ipecac.

Ipecacuanha, The B. P. Preparations of,—R. Glode Guyer,—Phar. Jr., 1899, Vol. 63, p. 622.
Deterioration noted in liquid extract and other preparations.

Jodtinktur, Ueber die Haltbarkeit der,—L. Johannessen,—Pharm. Zentralh., 1913, vol. 54, p. 221.
Determinations of free I and acidity (HI) at intervals of one week in different tinctures. KI increases stability.

Medicinal Plants, Retrogression of Active Substance in, by the Action of Enzymes,—P. Lami,—Bull. Chim. Farm., 1911, Vol. 50, p. 835; through Chem. Abst., Vol. 6, p. 1809.
Suggests prevention of change by sterilization with hot ethyl or methyl alcohol vapors and subsequent drying.

Medicinal Plants, Sterilization and Drying of,—E. Bourquelot,—Jr. Pharm. Chim., Series 7, Vol. 3, p. 149, through Chem. absts., 1911, Vol. 5, p. 2412.
Loss of active substance by enzyme action amounted to 31% in aconite leaves, 21.7% in digitalis, 10% in aconite root, 26.4% in colchicum bulbs.

Medicinal Plants, Sterilization of. Abst. of a lecture delivered before the Academy of Medicine, Paris, by Prof. E. Bourquelot,—Phar. Era, 1912, Vol. 45, p. 599.
Alkaloid is lost through the action of ferments.

Mutterkornwirkung, Beiträge zur Kenntniss der,—A. Grünfeld,—Arb. d. Pharmakol. Inst., Dorpat, 1892, Vol. 8, p. 108. (Seen only in reference.)
Concludes that under ordinary conditions Ergot is worthless after 6 months.

Mutterkorns, Geburtsklin. Untersuch. u. d. Haltbarkeit. des,—A. Bishofsberger,—Diss. Bern., 1897. (Seen only in reference.)
The effects of one and two year old drugs was compared clinically, showing a moderate decrease of activity in the older drugs.

Narcotic Extracts, Study of Some,—E. Carlinfanti,—Bull. Chim. Farm., Vol. 51, p. 777; through Chem. Absts., 1913, Vol. 7, p. 1400.
Assays of extracts of aconite, belladonna, hyoscyamus and nux vomica show practically no change in two years.

Nitroglycerin in Tablets, Comments on Some Official Standards and Tests,—Henry L. Bernegau,—Am. Jr. Ph., 1907, Vol. 79, p. 555.
A number of lots of tablets showed no loss in nine months.

Nitroglycerin Tablets, Digitalin Tablets and Fluidextract Ergot, Physiologic Assay of,—C. H. Edmunds and Geo. B. Roth,—Jr. Am. Med. Assn., 1908, Vol. 51, p. 2130.
Nitroglycerin tablets lost none of their strength in two years. Fl. Ext. Ergot showed variation in strength. One sample apparently had deteriorated when retested after three months.

Opium, The Keeping Qualities of Powdered,—L. Debordeaux,—Jr. Phar. Chim., Series 7, Vol. 6, p. 491; through Chem. Absts., 1913, Vol. 7, p. 680.
Shows increase in insoluble morphine with age; also a decrease in total morphine apparently due to oxidation.

Pepsin and Pepsin Preparations, Systematic Observations on,— C. T. Nixon,—Proc. Am. Phar. Assn., 1910, Vol. 58, p. 1264.
Alcoholic preparations lost 10% activity in three weeks, 20% in five weeks, and were practically inert after one year.

Pepsin, Conservation of the Activity of, in Elixirs of Pepsin,—E. Thibault,—Jr. Pharm. Chim., Series 7, Vol. 1, p. 480; through Chem. Absts., 1911, Vol. 5, p. 1823.
Claims that pepsin is weakened by prolonged contact with alcohol stronger than 10%.

Pepsin, Effect of Alcohol is Solution of,—Eugene Thibault,—Jr. Pharm. Chim., Series 6, Vol. 15, p. 161; through Proc. Am. Phar. Assn., 1902, Vol. 50, p. 1081.
Shows marked diminution of peptic activity after prolonged contact with weak alcohol.

Pepsin, Lactated, Elixir of,—W. A. Pearson,—Proc. Am. Phar. Assn., 1909, Vol. 57, p. 905.
Tests made as to amylolytic and proteolytic activity. A preparation containing 15% alcohol shows only about one-half the theoretical pepsin strength after a few weeks.

Pepsin, Pancreatin and Combinations of these Ferments, Laboratory Studies of,—A. Zimmerman,—Jr. Ind. and Eng. Chem., 1911, Vol. 3, p. 750.
Pepsin and pancreatin with the proper degree of acidity can be kept in the same solution for at least two and one-half years, without injury to either.

Pepsin Solutions, Effects of Hydrochloric Acid on,—Liebmann & Johannssen,—Ugeskrift for Lager, 1911, No. 25; through Phar. Zentralh., Vol. 53, p. 263; also Phar. Era, 1912, Vol. 45, p. 313.
The presence of HCl causes loss of peptic activity proportionate to the acidity and the time of standing.

Pepsin, Stability of Peptonizing Power of Liquid Preparations of,—A. Petit and A. L. Petit,—Jr. Phar. Chim., Series 7, Vol. 1, p. 150; through Proc. A. Ph. A., Vol. 58, p. 393; also Chem. Absts., Vol. 4, p. 2977.
Experiments extending over more than six years show that elixirs and wines retain digestive power for years practically undiminished.

Pharmaceutical Preparations, Causes of Deterioration to be Avoided,—Leon C. Fink,—Bull. Phar., 1898, p. 105; through Proc. Am. Phar. Assn., Vol. 46, p. 652.
Deterioration may be avoided by proper care to avoid the influence of air, moisture, cold, heat and sunlight.

Pharmaceutical Preparations, Influence of Enzymes in the Production of,—M. Winckel,—Schweiz. Wochschr., Vol. 47, p. 705; through Chem. Absts., 1910, Vol. 4, p. 1085.
On the influence of the elimination of enzyme action in conserving digitalis and ergot.

Pharmaceutical Preparations, Note on the Loss of Strength of Some, by long Storage,—R. A. Cripp,—Ph. Jr., 1907, Vol. 78, p. 519.
Shows the results of tests at intervals on Acet. Scillae, Liq. Ammon. Fort., Liq. Ammon. and Tr. Quin. Ammon.

Phosphorized Oil, The Permanence of,—Hugo Korte,—Phar. Ztg., Vol. 53, p. 655; through Chem. Absts., 1909, Vol. 3, p. 98.
Under some conditions the phosphorous content diminished rapidly. Light seems to exert more influence than air.

Report of Analysis of Preparations under the Food and Drug Law,—L. E. Sayre,—Trans. Kansas Acad. Sci., Vol. 22, p. 100.
To answer the question as to what constitutes deterioration, Prof. Sayre proposes to define it as a deviation from the professed standard * * * as may be determined by microscopical, chemical and macroscopical examination.

Sanguinaria, Assay of Fluidextract of,—H. B. Meade,—Jr. Am. Phar. Assn., 1912, Vol. 1, p. 134.
The alkaloid content fell from 2.58 gm. per 100 cc. on Feb. 21 to 2.23 gm. on June 1.

Sarsaparillen, Ueber die Pharmakologische Bedeutung und die Biologische Wertbestimmung der, und ihnen verwandter Drogen.—Ber. d. Deut. Phar. Gesell, 1912, Vol. 22, p. 205,—R. Kobert,— Quillaja, p. 215; Senega, p. 218; Sarsaparilla, p. 227.
Testing the haemolytic effect on various kinds of blood, the author finds thirty year old quillaja bark practically unchanged. Thirty year old senega is only 1/5 the strength of fresh root, and Honduras and Vera Cruz sarsaparillas of the same age about 1/5 and 2/3 respectively.

Sirupus Ferri Iodati.,—P. Bohrisch,—Pharm. Zentralh., 1913, Vol 54, pp. 343, 371.
A general discussion as to preparation and preservation, with assays on 19 samples, fresh, at six months and twelve months.

Solanaceous Extracts, Keeping Properties of,—Ribaut,—Bull. d. Sci. Pharm., 1908, Vol. 15, p. 495; through Phar. Jr., 1908, Vol. 81, p. 588; also Proc. Am. Phar. Assn., Vol. 57, p. 74.
Loss observed after four years: Ext. Belladonna leaves, 3% to 45%; Ext. Hyoscyamus, 69%; Ext. Stramon. leaves, 8% and 31%; Ext. Bellad. root, 1% to 12%; Ext. Hyoscyamus seed, 25%.

Spirit of Nitrous Ether, Inquiry into Causes of Change,—E. H. Farr and R. Wright,—Trans. Br. Phar. Conf., 1901, p. 447; through Proc. Am. Phar. Assn., Vol. 50, p. 749.
Deterioration is extremely rapid under ordinary conditions of storage.

Spirit of Nitrous Ether B. P., Progressive Deterioration in Containers,—S. F. Burford.—Chem. and Drug., 1908, p. 108; through Proc. Am. Phar. Assn., Vol. 50, p. 749.
Loss observed at intervals of 30 days during six months, when it had lost 82%.

Spirit of Nitrous Ether, The Keeping of, and a Suggestion for a Change in Formula,—Linwood A. Brown,—Am. Drug., 1911, Vol. 59, p. 215.
Gives results of assays made at intervals of two weeks on twelve different samples stored under varying conditions.

Spirit of Nitrous Ether, Deterioration of,—F. L. Shannon,—Jr. Am. Phar. Assn., 1910, Vol. II, p. 83.
Results are given on seven samples kept under average conditions and assayed at intervals of three months during fifteen months.

Spirit of Nitrous Ether, Preservation of,—G. E. Show,—Phar. Jr., 1903, Vol. 71, p. 236.
Properly stored, there is but slight loss. Under unfavorable conditions the loss in 14 days is from 12½% to 99%.

Standard Pharmaceuticals, Deterioration of Some,—H. E. Barnard,—Ph. Rev., 1908, Vol. 26, pp. 308, 321.
Experiments show an increase in strength with age in spirit of camphor and tincture of iodine and decrease in strength in lime water and ammonia water.

Strophanthus, Tr.,—Robert A. Hatcher,—Jr. Am. Med. Assn., 1907, Vol. 48, p. 1177.
No deterioration found in tincture even after sixteen years. The seeds do not undergo deterioration in keeping for several years.

Strophanthus, Tincture of,—A. R. Cushny,—Br. Med. Jr., 1912, Vol. II, p. 685.
Tinctures of digitalis, squill and particularly, strophanthus, deteriorate rapidly after dilution with water.

Sydenham's Laudanum, The Preparation and Preservation of,—M. Debourdeaux,—Jr. Pharm. Chim., Series 7, Vol. 6, p. 544; through Chem. Absts., 1913, Vol. 7, p. 2093.
After storing, showed a loss of 6% of its morphine which was not found in the precipitate. After one year there was an additional loss of 10%. A 3½ year old tincture had lost 17%, and one 20 years old, 44%.

Tinctures, Do they Deteriorate with Age?—Drug. Cir., 1913, Vol. 57, p. 389; reprinted from the Chem. Drug.
A discussion of various preparations as to stability.

Tincture Iodine,—H. Wastenson,—Svensk. Farm. Tidskrift., Vol. 17, pp. 68, 81, 113; through Chem. Abst., 1913, Vol. 7, p. 1952.
Increase of HI determined in a number of tinctures at intervals during eight weeks. KI retards deterioration.

Tincture of Iodine,—E. H. Gane,—Am. Drug., 1904, Vol. 44, p. 39.
Impurities in alcohol cause deterioration. With good alcohol the loss is about 1% of I in one year.

Tincture of Iodine,—C. H. LaWall,—Proc. Am. Phar. Assn., 1907, Vol. 55, p. 156.
The U. S. P. VIII tincture is a stable preparation under practically all conditions.

Tincture of Iodine,—L. F. Kebler,—Jr. Am. Phar. Assn., 1913, Vol. II, p. 514; also Jr. Ind. Eng. Chem., Vol. 5, p. 484.
Attention is called to the preservative effect of KI and the variation in samples examined. The limit of permissible variation is discussed.

Tincture of Iodine, Alteration on Standing,—C. Courtot,—Jr. Pharm. Chim., Series 7, Vol. 1, pp. 297, 354; through Chem. Absts., 1911, Vol. 5, p. 564.
Three experimental tinctures were examined monthly for one year. The iodine decreased from 67.5 gm. per liter to 54.6, 54.6 and 58.4 gms. respectively.

Tincture of Iodine, Changes in, on Storage, etc.,—Th. Budde,—Apoth. Ztg., Vol. 27, p. 203; through Chem. Absts., 1912, Vol. 6, p. 1493; also Pharm. Ztg., 1912, Vol. 57, p. 176; through Jr. Am. Phar. Assn., Vol. 1, p. 881.
Loss amounts to 20% in 9 months retarded by addition of KI or NaI, but noticeable nevertheless after six months.

Tincture of Iodine, D. A. B.—V. Weiblitz,—Phar. Ztg., Vol. 57, p. 734; through Chem. Absts., 1913, Vol. 7, p. 535.
Free iodine content with age increases materially. Limits of variation are needed.

Tincture of Iodine, Influence of Light and Air.—C. Hugenholtz,—Phar. Ztg., 1907, Vol. 52, p. 222; through Proc. Am. Phar. Assn., Vol. 55, p. 697.
Deterioration is greater if kept in full bottles protected from light.

Tincture of Iodine—Influence of Temperature and Light, etc.—C. Courtot,—Jr. Pharm. Chim., Series 7, Vol. 2, p. 344; through Chem. Absts, 1911, Vol. 5, p. 2525.
Changes shown in tinctures of the French Codex 1908. Light has no influence, but temperature affects change.

Tinctures of Iodine, Observations on Commercial,—Agnes Dunning and L. E. Sayre,—Am. Drug., 1909, Vol. 55, p. 211.
An investigation of the effect on different kinds of stoppers. With cork stoppers there is progressive concentration.

Tincture of Iodine Therapeutically Considered,—C. Courtot,—Jr. Pharm. Chim., Series 7, Vol. 1, p. 439; through Chem. Absts., 1911, Vol. 5, p. 1492.
There is concentration with age by evaporation.

Tincture of Iodine, The Stability of Free Iodine in,—Droste,—Pharm. Ztg., Vol. 57, p. 166; through Chem. Absts., 1913, Vol. 7, p. 215.
The alkalinity of glass container responsible for loss.

Tincture of Iodine, U. S. P. VIII,—Theo. D. Wetterstroem,—Proc. Ohio State Pharm. Assoc., 1908, p. 52; through Proc. Am. Phar. Assn., Vol. 57, p. 115.
KI retards change. Strength increases by evaporation.

Tinkturen, Ueber die Zweckmässigkeit von Perkolation oder Maceration zur Herstellung von, —J. Herzog,—Ber. d. Deutsch. Phar. Ges., 1906, Vol. 16, p. 359.
Discusses the influence of air, light and temperature on tinctures.

Tinctures and "Alcoolatures," A Comparative Study of the Active Principles in Some,—E. Dejean,—Jr. Pharm. Chim., Series 6, Vol. 29, p. 274; through Chem. Absts, 1909, Vol. 3, p. 1909.
Attention is called to loss of alkaloid in drugs during drying and the resulting lack of activity in tinctures made from them as compared with "mother tinctures" from green plants.

Wild Cherry Bark, Valuation of,—A. B. Stevens,—Proc. Am. Phar. Assn., 1896, Vol. 44, p. 215.
Differences in assay point to deterioration.

Wild Cherry Bark,—A. B. Stevens,—Proc. Am. Pharm. Assn., Vol. 47, p. 184.
Deterioration shown by assays at intervals of one year.

Wild Cherry, Deterioration of Syrup of,—J. Graham French,—Proc. Penna. Pharm. Assn., 1912; through Am. Jr. Pharm., 1913, Vol. 85, p. 82.
Hydrocyanic acid disappears within 3 or 4 months.

THE PHARMACIST WHO THINKS.

The pharmacist who stands around and *thinks* is a better business man than the one who spends every working hour in detail work. The profitable business is made by successfully utilizing the labor of others. A man's powers for personal effort are limited; he must depend upon others to help him. His task is to derive a profit from the labor of those he employs. To do this he must have leisure to plan, to watch, to oversee and direct. He must not occupy his mind so that he cannot do this. The minute that a business man permits the details of his business to master him, he loses the mastery of his business. He ceases to progress. Instead of being the driver of the engine, he becomes only a wheel in the machine. He loses the power to guide and bends his efforts simply to keep it moving.—*The Spatula.*

Section on Pharmacopoeias and Formularies

Papers Presented at the Sixty-First Annual Convention

A VOLUMETRIC METHOD FOR THE ESTIMATION OF MERCURY IN SOME OF ITS COMPOUNDS AND PREPARATIONS.

CHARLES H. LAWALL, PHILADELPHIA.

The estimation of mercury in its salts and compounds is accurately accomplished by several methods of accepted value, such as the sulphide precipitation method and the electrolytic method. Both of these methods, however, are open to certain serious objections, such as regards special apparatus and familiarity with the technique in the electrolytic method or of tediousness and the necessity of working with hydrogen sulphide in the other method. Some time ago a volumetric method was tried based upon the fact that mercury in certain of its compounds, combines with potassium sulphocyanate in molecular proportions, and the results have been so uniformly satisfactory that the method has been adopted as a means of estimating such of the compounds of mercury to which it is applicable in the U. S. P. IX.

Those to which it is applicable are all compounds except the halogen salts. The procedure is very simple, as is illustrated by the following as applied to metallic mercury.

"Weigh accurately about 0.4 gm. of mercury, dissolve it in a mixture of 10 cc. of nitric acid, warm the solution gently until red fumes cease to be evolved and the solution is colorless, and add 150 cc. of distilled water. Then add 2 cc. of ferric ammonium sulphate T. S. and titrate with tenth normal potassium sulphocyanate V. S. to the production of a permanent red color. Each cubic centimeter of tenth normal potassium sulphocyanate V. S. used corresponds to 0.01003 gm. of mercury."

The end point is very satisfactory and the entire operation consumes but a small fraction of the time required by either of the other methods and shows satisfactory results when employed in comparison with them.

The application of the method to such compounds as the oxides of mercury, both red and yellow, is very simple, as they only require to be dissolved in nitric acid as in the foregoing detailed method, using 0.5 gm. of the sample instead of 0.4 gm. as there directed.

Such preparations as the Mass of Mercury and Mercury with Chalk may also be assayed by simple solution of a weighed amount of the preparation in nitric acid and the dilution with water and titration as stated above.

It is believed that this method will fill a long felt want among analysts who frequently have occasion to determine percentages of such mercury compounds as can be determined by this method.

A PHARMACOPŒIA FOR THE PHYSICIAN AND THE DISPENSING DRUGGIST.

H. L. CHAMBERS, M. D., UNIVERSITY OF KAN.

In my former paper [1] it was shown that the physicians now in actual practice are not reading the Pharmacopœia, an effort was made to show *why* they are not reading it, and arguments were adduced to show that they never will read it in its present form.

Considering the Pharmacopœia as it is now, the work of the physician as it is now and making allowance for the changes in his work that are sure to come in the next few years, it is impossible to believe that its study would have much cultural value for the physician, or that it would make his work in any appreciable degree more safe or more successful. It is equally impossible to see how such study could benefit the retail druggist, by making his work easier, safer, more effective, or more remunerative. One may now well inquire whether it is worth while to make any further attempt to get the physicians to read *the* Pharmacopœia, or to read *a* pharmacopœia. Personal interviews with acquaintances do not give any encouragement to efforts toward securing a wider reading of the present volume, but do give more or less enthusiastic support to the idea of a radical modification of its subject matter. The more recent the schooling, the more indifferent to the Pharmacopœia was my observation on the practitioners whom I interviewed. One who is fresh from Rush did not recognize it as a useful book at all, and gave expression to the idea that it has no place in fundamental education, but expects to read it in later years as part of the finishing process. Another whose fundamental medical education was acquired in Baltimore and New York, with side trips to Germany and Philadelphia, does not believe the present work meets any important want in present day medical education, but is not so shameless about his neglect of it as is the very recent Rush graduate.

Interviews with druggists of the younger and liver (pronounced līver) sort convince me that they are not satisfied with the subject matter of the present Pharmacopœia, and that they would favor any change that would better meet the needs of their work as druggists, or would tend to bring themselves and the practitioners nearer together again. They argue with apparent soundness that reading the same well designed book would do much to promote mutual understanding and mutual helpfulness. The public interest would also be conserved by such a condition of things in the respect that better service would be rendered.

Various schemes have been proposed as tending to correct inadequacies as we now have them, but the medical profession has not had sufficient interest to take a very active part in the discussions. Personally, I should like to place my influence in favor of a multiple pharmacopœia—not the original notion of multiple district or hospital pharmacopœia, with one national one, but multiple pharmacopœias each of which shall be national, and at least one of which should

[1] JOURNAL for May, 1913, p. 572.

eventually become international. I ask for this on the ground that the material that should go into a pharmacopœia, is so varied and so extensive that one volume cannot well contain it. Also on the ground that its completeness which is essential, would tend in many cases to cover up and obscure the very information any given searcher would want, and hence for this reason, its information should be classified and separated.

Since the U. S. P. is used as a guide in the administration of the various Pure Food and Drugs Laws, it seems important that we have an authoritative book of standards and tests by which to standardize and test the various foods and drugs. Personally, I see no objection to including many articles that are not used as either food or medicines. Fuels, paints, lubricants, and illuminants might very well be included in this book of standards. Eventually all substances whose chemistry has any scientific, economic, or commercial importance would be recognized and standardized in this book, and the book itself would logically become an international one, at least in so far as the substances in common use are concerned.

In this scheme the second pharmacopœia would be the book of chief interest to real pharmacists, since it would have to do only with pharmacy. It should discuss the source, identification, collection, preparation and preservation of medicinal substances. It should be so full and explicit in all the lines mentioned that any competent pharmaceutical chemist could produce as good preparations as any other. We should then hear no more of the 'active principle of calomel," of the "special potency" of somebody's blue iron (?) or of the superiority of some other man's viburnum, because this particular pharmacopœia would tell every manufacturing pharmacist how to get good calomel and blue iron (?) and would be so minute in its directions about the selection, care, manufacture and preservation of viburnum that all good houses would have products containing whatever merit may be found in the drug at its best. With such a set of pharmacopœias as is here contemplated in actual existence, it would be easier to cut the humbug out of some present day pharmacy and to teach the medical profession to order preparations according to their merit.

The third pharmacopœia should be one designed for the guidance of the physician and the dispenser, and since they both are in relation to the patient, and are supposed mutually to assist and to check each other, this volume should contain the matters necessary for the guidance of both. It should contain little or no information which is to be found in either of the other volumes, for the reason that such information is not of common use to either the physician or the dispensing pharmacist and would only make their particular pharmacopœia cumbersome; e. g., the doctor prescribes and the druggist dispenses morphine sulphate in some combination, and neither of them is interested in the natural history of the poppy or the political history of opium, and neither of them will make any tests to determine whether the stuff dispensed is what was really ordered, *ergo* leave out the natural history and the tests.

I pause here and open the present Pharmacopœia at random,—happening on pages 176 and 177. The article beginning on the left hand page tells how to make Fluidextract of Colchicum Seed and the one beginning on the right hand page tells how to make Fluidextract of Conium. Neither article contains a

single thing of interest to a physician or dispensing pharmacist. Neither of these men will attempt to make either preparation, for neither has the personal skill nor the apparatus.[2] Is it not high time to abandon the erroneous notion that the dispensing druggist does or can manufacture the preparations that he uses? It seems to me that the articles cited above have the same relation to the work of the dispenser that a carefully prepared and scientifically correct article on the preparation of steel and the manufacture of hœmostatic forceps would have to the minor surgery that I undertake. If you agree with me, as I think you must, that the present Pharmacopœia is of almost no use at all to the physician and to his dispensing pharmacist, let us ask what would be of use to them. There are five points concerning each preparation that I think are of vital interest and importance to these men, and I mention them serially but not necessarily in order, for their order of relative importance will vary with the different drugs. They are: 1. Preservation. 2. Incompatibility. 3. Physiological action (including toxicology). 4. Therapy. 5. Synergism.

I. No physician desires his prescriptions compounded with dead or deteriorated drugs, and no self-respecting pharmacist is one whit behind the doctor in his effort for active and accurate preparations. Hence, the importance of directions for the preservation of the preparations and the suggestions of tests, the more obvious the better, whereby one may detect deterioration. 2. Both are alike interested in incompatibility, and their pharmacopœia should mention the chemical and physiological incompatibles. 3. Before one should prescribe or another dispense any drug, he should have an accurate idea of what it will probably accomplish when properly exhibited. The physiological, or toxicological action of a drug, seems to me to be the real focus of its study and should be given large room in the pharmacopœia of the men who are responsible for the application of drugs to patients. It necessarily includes full discussion of the amount, manner, and frequency of the dosage, size, age, sex, and other special conditions of the patient. It is important for the dispenser, because he is supposed to act as a check on the prescriber. Also, (pardon me while I feel gently over a sore spot) the dispenser, who usually prescribes more or less for common and trivial ailments, will do this more safely and successfully if he knows more physiological action. 4. This book should discuss therapy for the reason that this is the end or aim of the whole line of study. The physician will have the greater interest in this part of the book, but the dispensing pharmacist will be a better and safer helper and checker if he, too, reads the section along with the one on physiological action. A little more knowledge on these points would probably steady and mayhap save morally whole the druggist when he is tempted to prescribe for conditions not well understood by him; i. e., a little more learning may be expected to increase his sense of responsibility and lessen his own confidence, thereby making him safer. 5. The synergism of drugs is rarely discussed in any serious or systematic way, but should have due consideration in the doctor's and dispenser's pharmacopœia. If a drug acts more kindly or effectively in combination than alone, say so, and say why. A better disseminated information on this line would save us all from

[2]The editor can not assent to this as a statement of fact so far as it relates to the fairly qualified pharmacist.

the temptation to try out the wonderful "special" preparations that each house puts out—those whose promise always so far outruns their performance. In practice, the ideas of synergism and correction are often allowed to crystallize into ready made prescriptions, and I suppose every large hospital in the world has its prescriptions mainly made up and carried in stock. For routine work they are made to answer whether they *exactly* fit the case or not. I am not favorable to this sort of thing in private practice, but do think that some study along this line would improve both the prescribing and the dispensing.

Allow me to make some suggestions about how the proposed book should be arranged.

1. The classification should be made on the active portions of the drugs; e. g., there should be a careful article on tannic acid, and under this in smaller type there should be short paragraphs on blackberry, kino, catechu, gambir, etc., giving the special features and uses of each. 2. The arrangement should be alphabetic, the unimportant drugs being mentioned merely to refer to the page of the subsidiary paragraph as indicated above. 3. There should be a long section of the book devoted to therapeutics, in which little or no mention is to be made of any special disease. The classification here should be by *indications* and the arrangement alphabetical. Let me suggest a few topics: To destroy bacteria, on the skin, in the tissues, in the alimentary canal, in the nose and throat, in the dejecta, in a room, etc., to raise blood pressure, to lower blood pressure, to lessen motor excitability, to lessen sensory excitability, to improve nutrition, to lower body temperature, to lessen perspiration, to produce sleep, etc. with perhaps more specific directions for drug combat of a few special bacteria and protozoa like streptococcus pyogenes, bacillus of tuberculosis and the organism of malaria. 4. The substances treated should include all those used in the practice of medicine in the United States. When a preparation is not controlled by tests that guarantee its constancy, say so, and when its chief claim to confidence is its mystery or its advertising, say that. 5. The style of the book throughout should be dogmatic on all matters that are well established and well known. On those well established and not so well known there should be some citation of important or fundamental papers. On matters of importance that are still in doubt there should be considerable of experience quoted and arguments epitomized, so that the reader may be allowed to assist in finding the correct conclusions.

Let me claim in conclusion that this scheme would make everybody happy by giving to each the help and inspiration to thought and growth beyond anything the present pharmacopoeia can do; viz, the chemist would have his authoritative book of standards and tests tending soon to establish a uniform nomenclature, so that "pure white lead," e. g. would be the same everywhere, the manufacturing pharmacist would have in his book the alleged private information that so many houses now claim to keep so carefully guarded, and the physician and the dispensing druggist would have in their book the information that would enable them to work with more certainty and satisfaction to themselves and to give better service to the public.

Section on Education and Legislation

Papers Presented at the Sixty-First Annual Convention

PHARMACY LAWS PROPOSED, ENACTED OR AMENDED DURING 1912-1913.*

FRANK H. FREERICKS.

AMENDMENT TO CONNECTICUT PHARMACY LAW.

Section 1. Section twelve of chapter 216 of the public acts of 1909 is hereby amended to read as follows: Said commission shall have power to investigate all alleged violation of the pharmacy law and all laws relating to the dispensing or sale of drugs, medicines, intoxicating liquors under a druggist's license or poisons, or the practice of pharmacy, which may come to its notice, and when there appears reasonable cause therefor, and on reasonable notice to the person accused of such violation, to take and hear testimony with reference thereto; to bring the same to the notice of the proper prosecuting authorities, or said commission may further examine into all cases of alleged abuse, fraud, or violations of the laws relating to the sale of intoxicating liquors and incompetence and may suspend the license of any licensed pharmacist or assistant pharmacist, and may revoke the license of any person convicted of violating any provision of this act.

Sec. 2. Section sixteen of chapter 216 of the public acts of 1909 is hereby amended to read as follows: Nothing herein shall prevent a practicing physician from compounding or dispensing his own prescriptions; or prevent the sale of insecticides; or prevent the sale of patent or proprietary medicines which do not conflict with the act concerning the sale of narcotic drugs; or prevent the sale of any drugs, medicines, or poisons at wholesale; or prevent any person from becoming a partner in or the owner of a pharmacy conducted by a licensed pharmacist; or prevent any keeper of a country store from keeping for sale and selling such domestic remedies as are usually kept and sold in such stores, except the following, viz.: Opium, morphine, and all other derivatives of opium, preparations containing opium in excess of two grains per ounce or morphine in excess of one-fourth grain per ounce, carbolic acid stronger than 10 percentum solution, prussic acid, oxalic acid, strychnine, arsenic, cyanide of potassium, chloral hydrate, chloroform, cobalt, sugar of lead, mercury in any form, belladonna and its preparations for internal use, and nux vomica and its preparations provided such keeper shall not compound medicines, and provided that when sold in such stores all medical preparations recognized by the United States Pharmacopoeia and National Formulary shall be of standard strength, and shall be prepared by a licensed pharmacist, and shall be sold only in original packages bearing the label of a licensed pharmacist.

Approved June 6, 1913.

*Continuation of the report of the secretary of the Section on Education and Legislation. See Journal for Dec., 1913.

DEFEATED ILLINOIS PHARMACY BILL.

Section 1. That it shall be unlawful for any person not a registered pharmacist within the meaning of this Act to open or conduct any pharmacy, dispensary, drug store, apothecary shop or store, for the purpose of retailing, compounding or dispensing drugs, medicines or poisons, and any person violating the provisions of this section shall be liable to a penalty of not less than twenty nor more than one hundred dollars for every such violation: Provided, however, that nothing in this Act shall prevent any person or persons owning a drug store or pharmacy, who shall employ and place in active and personal charge of the same, a registered pharmacist, and that nothing herein contained shall apply to nor in any manner interfere with the practice of any physician, or prevent him from supplying to his patients such articles as may seem to him proper, nor with the exclusive wholesale business of any wholesale druggist: Provided, that nothing contained in this Act shall apply to the sale of patent or proprietary preparations which do not contain cocaine, alpha or beta eucaine, morphine, opium, heroin, chloroform, cannabis indica, chloral hydrate or acetanilid or any salt or compound or any derivatives or preparations of the foregoing substances, when sold in original and unbroken packages.

Sec. 4. Any person shall be entitled to registration as a registered pharmacist who is of the age of twenty-one years or over, of good moral character and temperate habits, and who shall have passed a satisfactory examination before the board of pharmacy.

Every applicant for examination as a registered pharmacist must furnish proof of four years' experience under a registered pharmacist in compounding drugs and medicines in drug stores where the prescriptions of medical practitioners are compounded. Actual time of attendance, but not to exceed two years, at any recognized school of pharmacy, college of pharmacy or department of pharmacy of a university, may be accredited on the above required service under a registered pharmacist: Provided, that applicants are able to show by proper certificate from the school of pharmacy, college of pharmacy or department of pharmacy of the university which they have attended that their school work was satisfactory.

Every applicant for examination as a registered pharmacist who was not registered by said board of pharmacy as an apprentice or as an assistant pharmacist prior to the taking effect of this amendatory Act must furnish proof of having graduated from a school of pharmacy, college of pharmacy, or department of pharmacy of a university that is recognized by said board.

The board of pharmacy may, in its discretion, grant certificates of registration as a registered pharmacist to such persons as shall furnish with their applications satisfactory proof that they are graduates from a school of pharmacy, college of pharmacy or department of pharmacy of a university that is recognized by said board and that they have been registered by examination in some other state: Provided, that such other state shall require a degree of competency equal to that required of applicants in this state.

Every applicant for registration as a registered pharmacist shall pay to the secretary of the board the sum of ten dollars at the time of filing the application.

The payment of said sum of money, as aforesaid, shall entitle the applicant to take a second examination, in case he failed in the first, but no more: Provided, said second examination is taken within six months after the first; and upon the payment of an additional five dollars, in case the applicant passes a satisfactory examination, the secretary of the board of pharmacy shall issue to him a certificate as a registered pharmacist.

The state board of pharmacy shall make rules to establish a uniform and reasonable standard of educational requirements to be observed by schools and colleges of pharmacy or pharmacy departments of universities, and said board may determine the reputability of such schools, colleges and departments of pharmacy by reference to their compliance with such rules.

Sec. 5. Any person shall be entitled to registration as a local registered pharmacist and shall be deemed a registered pharmacist within the meaning of this Act who is of the age of twenty-one years or over, of good moral character and temperate habits, and who shall have passed a satisfactory examination before the board of pharmacy.

Every applicant for examination as a local registered pharmacist must furnish proof of four years' experience under a registered pharmacist in compounding drugs and medicines in drug stores where the prescriptions of medical practitioners are compounded. Actual time of attendance, but not to exceed two years, at any recognized school of pharmacy, college of pharmacy or department of pharmacy of a university, may be accredited on the above required service under a registered pharmacist: Provided, that applicants are able to show by proper certificate from the school of pharmacy, college of pharmacy, or department of pharmacy of the university which they have attended that their school work was satisfactory.

Every applicant for examination as local registered pharmacist who was not registered by said board of pharmacy as an apprentice or as an assistant pharmacist prior to the taking effect of this amendatory Act must furnish proof of having graduated from a school of pharmacy, college of pharmacy, or department of pharmacy of a university that is recognized by said board.

Every applicant for registration as a local registered pharmacist shall pay to the secretary of the board the sum of ten dollars at the time of filing the application. The payment of said sum of money, as aforesaid, shall entitle the applicant to take a second examination in case he failed in the first, but no more: Provided, said second examination is taken within six months after the first; and upon the payment of an additional five dollars, in case the applicant passes a satisfactory examination, the secretary of the board of pharmacy shall issue to him a certificate as a local registered pharmacist. Said certificates shall be operative in and apply to the village, town, city, place or locality for which granted, and no other.

Provided, that no local registered pharmacist certificate shall be granted under this section for any village, town, or city, the population of which exceeds 500, according to the federal census next preceding.

Provided, further, that any and all persons holding registered pharmacist time service certificates heretofore issued may have the same renewed from year

to year in the same manner and under the same conditions as are provided herein for the renewal of registered pharmacist certificates.

Sec. 2. No person shall sell at retail any drug, medicine or poison without affixing to the box, bottle, vessel or package containing the same a label bearing the name of the article distinctly shown, with the name and place of business of the registered pharmacist from whom the article was obtained: Provided, that nothing in this section shall apply to the sale of patent or proprietary preparations which do not contain cocaine, alpha or beta eucaine, morphine, opium, heroin, chloroform, cannabis indica, chloral hydrate or acetanilid, or any salt or compound or derivative of the foregoing substances, when sold in original and unbroken packages, nor with the dispensing of prescriptions of licensed physicians, licensed dentists or licensed veterinarians, nor with the sale of paris green or lead arsenate or other poisonous substances or mixtures of poisonous substances in unbroken packages, for use in the arts or insecticide purposes: Provided, that they bear a label with the name or names of such poisonous substances and the word "poison" printed thereon in prominent type and the names of at least two readily obtainable antidotes with directions for their administration. Every proprietor or manager of a drug store or pharmacy shall keep in his place of business a suitable book or file, in which shall be preserved for a period of not less than five years, the original of every prescription compounded or dispensed at such store or pharmacy, numbering, dating and filing them in the order in which they were compounded, and shall produce the same in court or before any grand jury whenever thereto lawfully required. Said book or file of original prescriptions shall at all times be open for inspection by duly authorized officers of the law. Any person failing to comply with the requirements of this section shall be liable to a penalty of $5 for any and every offense.

Sec. 12a. No person shall sell any drug, medicine, medicinal preparation or ointment containing any morphine, opium, heroin, chloroform, cannabis indica, chloral hydrate or acetanilid, or any salt or compound or any derivative or preparation of such substances without affixing to the bottle, box, vessel or package containing the same and upon the outside wrapper of the package as originally put up, a label distinctly displaying the name and quantity in grains or minims in each ounce of each of the substances mentioned in this section, their salts, compounds or derivatives, with the name and place of business of the manufacturer: Provided, that nothing contained in this section shall apply to the dispensing of the prescriptions of licensed physicians, licensed dentists or licensed veterinarians. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor and on conviction shall be punished by a fine of not less than twenty dollars and not more than one hundred dollars for each offense.

Sec. 12b. It shall be unlawful for any person to prescribe for, sell, retail, give away, or furnish to any habitual user of the same, knowing him to be such, any morphine, opium, heroin, chloroform, cannabis indica, chloral hydrate, or acetanilid, or any salt or compound of said last named substances, or any preparation containing said last named substances, or their salts or compounds: Provided, any licensed physician may, in good faith, prescribe or furnish for the use of any habitual user of said drugs who is under his professional care such

substances as he may deem necessary for his treatment when such prescriptions are not given or substances furnished for the purpose of evading the provisions of this Act. Any person violating the provisions of this section shall be deemed guilty of a misdemeanor and on conviction shall be punished by a fine of not less than twenty dollars and not more than one hundred dollars for each offense.

Sec. 13. Any person who shall willfully make any false representation to procure registration for himself or any other person or who shall make false representation as to his registration as an apprentice, assistant pharmacist or registered pharmacist shall be deemed guilty of a misdemeanor and on conviction shall be fined not less than fifty dollars nor more than one hundred dollars for each and every offense.

Sec. 14a. It shall be unlawful for any druggist or other person to retail, sell or give away any cocaine, alpha or beta eucaine, or any salt or any compound, or derivative of any of the foregoing substances, or any preparation or compound containing any of the foregoing substances, or any of their salts or compounds, or derivatives, except upon the written prescription of a duly registered physician, licensed dentist or licensed veterinarian, which prescription shall contain the name and address of the person for whom prescribed (or if prescribed by a licensed veterinarian shall state the kind of animal for which prescribed and the name of the owner thereof) and the date the same shall have been filled, and shall be permanently retained on file by the person, firm or corporation, where the same shall have been filled and it shall be filled but once, and of it no copy shall be given to any person, and the original bill shall at all times be open to the inspection of the prescriber, to the state board of pharmacy, and all officers of the law; except, however, that such cocaine, alpha or beta eucaine, or any salt, or any compound, or any derivative of the foregoing substances, or any preparation or compound containing any of the foregoing substances, or any of their salts or compounds, or derivatives, may lawfully be sold at wholesale upon the written order of a licensed pharmacist, or licensed druggist, duly registered practicing physician, licensed veterinarian or licensed dentist: Provided, that the wholesale dealer shall affix or cause to be affixed to the bottle, box, vessel or package, containing the article sold, and upon the outside wrapper of the package as originally put up, a label, distinctly displaying the name and quantity of cocaine, alpha or beta eucaine, or any salt or compound, or derivative of any of the foregoing substances, sold, and the word "Poison" with the name and place of business of the seller, all printed in red ink. And, provided, also, that the wholesale dealer shall, before delivering any of the articles, make or cause to be made in a book kept for that purpose, an entry of the sale thereof, stating the date of sale, the quantity, name and form in which sold, the name and address of the purchaser, and the name of the person by whom the entry is made; and the said book shall be always open for inspection by the proper authorities of the law, and shall be preserved for at least five years after the date of the last entry made therein.

It shall be unlawful for any person to have in his or her possession at any one time any cocaine, alpha or beta eucaine, or any salt or any compound, or any derivative of any of the substances mentioned in this sentence, unless it was

obtained by means of a prescription of a licensed physician, licensed dentist or licensed veterinarian: Provided, that the above provision shall not apply to registered pharmacists, licensed physicians, licensed dentists, licensed veterinarians, jobbers, wholesalers and manufacturers of drugs and medicines, or retail druggists or hospitals.

Sec. 15b. It shall be the duty of the board of pharmacy to procure full sets of weights, balances and measures used in compounding drugs, medicines and poisons, which it shall cause to be tried, proved and sealed by the state or United States standards, under the direction of the secretary of state, or bureau of standards of the United States government. The board of pharmacy shall have the power to inspect all weights, balances and measures used by retail druggists in compounding drugs, medicines and poisons, and shall have the power to enforce the keeping and use of proper weights and measures. Any person or persons failing to keep and use standard weights, balances and measures, as provided by the board of pharmacy, shall be guilty of a misdemeanor and upon conviction thereof shall be fined not less than ten ($10) nor more than fifty dollars ($50) for each and every offense.

NOTE—This bill was amended before its final defeat by striking out wherever they appear, the words "acetanilid, chloroform, Cannabis Indica, heroin, chloral hydrate, morphine and opium."

KANSAS PHARMACY LAW, AS ENACTED AFTER AMENDMENT.

Section 1. It shall be hereafter unlawful for any person within the State of Kansas to open or conduct any drug store, pharmacy, retail store, shop or other place of business for retailing, dispensing or compounding medicines or poison, or to retail, except as is provided in chapter 70 of the General Statutes of Kansas of 1909, any drug, or medicinal preparation or any article containing the same for medicinal use, or dispense or compound any medicine or poison, unless such person be a registered pharmacist or under the supervision of a registered pharmacist within the meaning of this act. And it shall be unlawful for any person to compound or dispense any physician's prescriptions unless such person be a registered pharmacist or an assistant registered pharmacist within the meaning of this act, except as hereinafter provided. The term "medicine," as used in this act shall include all medicines and preparations, and any substance or mixture of substances intended to be used for the cure, mitigation or prevention of diseases of man; provided, none of the provisions of this act shall apply to or be construed to affect in any way the sale of patent or proprietary medicines or flavoring extracts, nor in any way interfere with, limit or repeal the provisions of chapter 70 of General Statutes of 1909.

SEC. 2. Any person who may desire a certificate as a registered pharmacist, shall apply for examination to the board of pharmacy, and shall pay the secretary of the board the sum of five dollars. If the board shall find that he has had practical experience for four years in compounding physicians' prescriptions, in the general duties of pharmacy, and has had at least one year of high school work or its equivalent, and otherwise duly qualified, they shall duly register him and issue him a certificate as registered pharmacist. In case of failure to pass a satisfactory examination, second examination may be granted within six months without further payment.

SEC. 3. Pharmacists registered as herein provided and dispensers of medicine shall have the right to keep and sell, under such restrictions as herein provided, all drugs, medicines and poisons authorized by the National Formulary, the United States Pharmacopœia and other standard pharmaceutical and medical works of recognized utility; provided, that nothing herein contained shall be so construed as to shield any apothecary or pharmacist who violates or in way abuses this trust for the legitimate and actual necessities of medicine, from the utmost rigor of the law relating to the sale of intoxicating liquors, morphine, cocaine or chloral, and upon the conviction of any violation of the prohibitory law, or of this law, his name shall be stricken from the register, and in addition thereto shall be fined not less than one hundred dollars nor more than three hundred dollars, and not less than thirty days nor more than ninety days in jail, or both such fine and imprisonment. It shall be unlawful for any person, on and after the passage of this act, to retail any articles enumerated in schedules A, B and C, except as provided in sections 1 and 4.

Schedule A. Arsenic and its preparations, corrosive sublimate, white precipitate, red precipitate, biniodide of mercury, cyanide of potassium, hydrocyanic acid, chloroform, strychnine, and all other poisonous vegetable alkaloids and their salts, and essential oil of bitter almonds, or opium and its preparations, excepting paregoric and other preparations of opium containing less than two grains to the ounce; or other habit-producing drugs, or preparations containing same having same effect.

Schedule B. Aconite, belladonna, colchicum, conium, nux vomica, henbane, cantharides, creosote, digitalis, and their pharmaceutical preparations; croton oil, sulphate of zinc, sugar of lead, mineral acids, carbolic acid, oxalic acid, permanganate of potassium, formaldehyde, and all other virulent poisons, except poison fly-killers, lye, ammonia, Paris green, arsenate of lead, wood alcohol, London purple, commercial poison for rats, mice and bed-bugs, and denatured alcohol when sold in sealed packages and plainly labeled "Not for Medical Use, Poison," may be sold through the regular channels of trade.

Schedule C. Oil of savin, oil of tansy, ergot and its preparations, cotton root and its preparations, and all other active emmenagogues or abortives.

SEC. 4. Articles enumerated in schedules A and B shall not be sold without distinctly labeling the box, vessel or paper in which said poison is contained; also the outside and inside wrapper or cover, with the name of the article, the word "poison," and the name and place of business of the seller. Nor shall it be lawful for any person to sell or deliver any poison enumerated in schedules A and B unless upon due inquiry it be found that the purchaser is aware of its poisonous character and represents that it is to be used for a legitimate purpose; nor shall it be lawful for any registered pharmacist or assistant registered pharmacist to sell or deliver any articles included in schedules A and B without, before delivering the same to the purchaser, causing an entry to be made in a book for that purpose stating the date of sale, the article sold, the quantity thereof, the purpose for which it is represented by the purchaser to be required, the name of the dispenser, and the name and address of the purchaser, signed by himself; such book to be always open for inspection by the proper authorities, and to be

preserved for at least five years. No article in schedule C shall be sold except on the prescription of a legally qualified phyisician. The provisions of this section shall not apply to the sale of poisons in not unusual doses and quantities upon the prescription of licensed practitioners of medicine. All prescriptions of practicing physicians shall be filed and retained by the dispenser, serially numbering, dating and filing the same. Said serial number and date and signature, together with proper directions, shall be placed upon package or container in which said medicine is dispensed. Failure to keep prescription files in accordance with the provisions of this act shall be prima facie evidence of violation of this law. The prescription files of the pharmacist shall be open to inspection by the proper authorities at all times.

SEC. 5. Nothing hereinbefore contained in this act shall prohibit any practitioner of medicine from compounding his own prescriptions and administering or supplying to his patients such articles as may be fit, proper and necessary, provided drugs and medicines dispensed by him shall comply with the Kansas food and drug law and be subject to inspection as provided in said law; and it is also further provided that it shall be lawful for retail dealers to sell the usual domestic remedies and medicines in unbroken packages, not including any article enumerated in schedules A and B of this act, in case such dealer shall procure a license from the board of pharmacy, at a fee of $2.50 annually, not as a registered pharmacist but as a registered dealer; and said annual fee to be paid within thirty days from the expiration of said license, otherwise said annual fee to be five dollars.

SEC. 6. Every proprietor or conductor of a drug store or pharmacy, and everyone who dispenses from a private stock of drugs, shall be responsible for the quality of all drugs, chemicals and medicines he may sell or dispense; and should he knowingly and fraudulently adulterate or cause to be adulterated such drugs, chemicals or medicinal preparations, he shall be deemed guilty of a misdemeanor.

SEC. 7. That the State Board of Pharmacy is authorized and directed to make and publish uniform rules and regulations not in conflict herewith, which rules and regulations may include, if necessary for the proper execution of this law, the collection and examination of medicines and drugs kept for sale, offered for sale or for dispensing, or sold in the state of Kansas, by any pharmacist, or kept in stock by any physician, merchant or dispenser. Samples thus collected may be submitted for analysis to the drug laboratory established under the Food and Drugs Act, Section 4, Chapter 266, Laws of 1907, and the results of the analysis may be published in the bulletin of the Board of Health, which said rules and regulations shall be published in the official state paper of the state.

SEC. 8. Any person who shall violate any of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not to exceed fifty dollars, or imprisonment in the county jail for not more than six months, or both in the discretion of the court.

SEC. 9. The original Sections 8103, 8104 and 8105 of the General Statutes of Kansas for the year 1909 are hereby repealed. All acts or parts of acts in conflict herewith are hereby repealed.

SEC. 10. This act shall take effect and be in force from and after its publication in the statute book.

MASSACHUSETTS PHARMACY LAW AMENDMENT.

(Chap. 705.)

An Act to Provide for Registering and Licensing Stores for Transacting Retail Drug Business.

Section 1. The term "drug business" as used in this act shall mean the sale of opium, morphine, heroin, codeine or other narcotics, or any salt or compound thereof, or any preparation containing the same, or cocaine, alpha or beta eucaine, or any synthetic substitute therefor, or any salt or compound thereof, or any preparation containing the same, and the said term shall also mean the compounding and dispensing of physicians' prescriptions.

Section 2. No store shall be kept open for the transaction of the retail drug business unless it is registered with and a permit therefor has been issued by the board of registration in pharmacy as herein provided.

Section 3. The board of registration in pharmacy shall, upon application, issue a permit to keep open a store for the transaction of the retail drug business to such persons, firms and corporations as the board may deem qualified to conduct such a store. The application for such a permit shall be made in such manner and in such form as the board shall determine. A permit issued as herein provided shall be exposed in a conspicuous place in the store for which the permit is issued and shall expire on the first day of January following the date of its issue. The fee for the permit shall be one dollar.

Section 4. No such permit shall be issued for a corporation to keep open a store for the transaction of the retail drug business, unless it shall appear to the satisfaction of the said board that the management of the drug business in such store is in the hands of a registered pharmacist.

Section 5. The said board may suspend or revoke a permit issued hereunder for any violation of the law pertaining to the drug business or the sale of intoxicating liquors or for aiding or abetting a violation of any such law; but before suspending or revoking any such permit the said board shall give a hearing to the person firm or corporation holding the permit, after due notice to such person, firm or corporation of the charges against him or it and of the time and place of the hearing. At the hearing, such person, firm or corporation may appear with witnesses and be heard by counsel. Witnesses at all hearings shall testify under oath and any member of the board may administer oaths to witnesses. Any person so sworn or affirming who willfully swears or affirms falsely respecting any matter upon which his testimony is required shall be deemed guilty of perjury. The board shall have power to require the attendance of persons and to compel the production of books and documents. Three members of the board shall be a quorum for such a hearing, but no permit shall be suspended or revoked unless upon the vote of three or more members of the board.

Section 6. For the purpose of enforcing the provisions of this act the board may expend a sum not exceeding one thousand dollars annually.

Section 7. Whoever violates any provisions of this act shall be punished by a fine of not less than five nor more than one hundred dollars, or by imprisonment for not more than thirty days or by both such fine and imprisonment.

Section 8. This act shall take effect on the first day of January, nineteen hundred and fourteen.

Section 9. All acts and parts of acts inconsistent herewith are hereby repealed. (Approved May 27, 1913.)

This bill as passed is the result of several conferences between representatives of the Board of Pharmacy, your Association, the Liggett stores people and the Watch and Ward Society. This is the first measure which has ever been enacted into law which gives the Board of Pharmacy actual supervision over drug stores. It will be possible for the Board under the provisions of this act to close a drug store for any infringement of law pertaining to the sale of drugs or intoxicating liquors. Your committee believes this to be a long step in the right direction.

MINNESOTA PHARMACY LAW AMENDMENT.

Section 1. Creation of State Board, Employment of Attorney, and When Violators shall be Deemed Guilty of a Misdemeanor.—That Section 2327, Revised Laws of 1905, be amended to read as follows:

2327. The state board of pharmacy shall consist of five registered pharmacists of the state, appointed by the governor, each for the term of five years and until his successor qualifies. Vacancies shall be filled by like appointment for the unexpired term. No person connected with any school or college of pharmacy shall be a member of the board, and, if a member become so connected, his membership shall cease. The Minnesota state pharmaceutical association may recommend five names for each appointment to be made, from which list the governor may select. The board shall elect annually one of its members as president, and a registered pharmacist, who may or may not be a member, as secretary. It may employ an attorney and other necessary assistants, and make rules for the conduct of its business. It may, by its duly authorized representative, enter and inspect any and all places where drugs, medicines and poisons are sold, given away, compounded, dispensed or manufactured. Any person refusing to permit or otherwise preventing such duly authorized representatives from entering such places, shall be guilty of a misdemeanor. It shall enforce and obey the provisions of this subdivision. and report its proceedings to the governor annually, with such information and recommendations as it deems proper, giving the names of all pharmacists registered during the year, and the items of its receipts and disbursements.

Sec. 2. Examinations and Fees.—That Section 2329, Revised Laws of 1905, be amended to read as follows:

2329. The board shall meet at least once in every three months to examine applicants for registration and transact its other business, giving reasonable notice of all examinations, by mail, to known applicants therefor. The secretary shall record the names of all persons registered by the board, together with the grounds upon which the right of each to registration was claimed. The fee for examination shall be five dollars. All registered pharmacists and assistants, while employed as such, shall be exempt from service as jurors. On hearing, the board may revoke any certificate of registration obtained by false representation or other fraud, or when the holder is addicted to the liquor or drug habit so as to unfit

him for the practice of pharmacy, and may refuse registration to any person so addicted.

Sec. 3. Qualifications of Applicants.—That Section 2331, Revised Laws of 1905 be amended to read as follows:

2331. An applicant for a certificate as assistant shall be eighteen years old, or over, and have had two years' practical experience in drug stores where physicians' prescriptions are usually compounded. Provided, however, if he be a graduate of a school of pharmacy whose course includes twelve months of laboratory work, but one year's experience shall be required. If upon examination, the board finds him qualified, he shall be registered. His certificate shall entitle him to act as an assistant to a registered pharmacist and to compound and dispense drugs and medicines during the temporary absence of the registered pharmacist.

Sec. 4. Registration of Pharmacists From Other States, and Fees.—That Section 2332, Revised Laws of 1905, be amended to read as follows:

2332. The board, without examination, upon receipt of a fee of twenty-five dollars, may grant registration to any pharmacist licensed or registered by the board of pharmacy, or a similar board, of another state.

Sec. 5. Annual Fees to be Paid.—That Section 2334, Revised Laws of 1905 be amended to read as follows:

2334. Every person registered by the board, while continuing in business, shall annually pay to the secretary a renewal fee, to be fixed by the board, and not to exceed three dollars for a pharmacist and two dollars for an assistant. A person who has once been registered and has defaulted in the payment of fees may be reinstated within two years of such default, without examination, upon payment of arrears. Every certificate and renewal shall expire at a time therein prescribed, not later than one year from its date.

Sec. 6. Definition of Drugs and Exceptions.—That Section 2335, Revised Laws of 1905 be amended to read as follows:

2335. Exceptions as to sale. Drugs, medicines and poisons, for the purposes of this subdivision, shall include all substances commonly kept in drug stores and used in compounding medicines or sold for medicinal purposes. Nothing in the subdivision, however, shall prevent a physician from compounding prescriptions for use in his practice or furnishing to his patients such articles as he deems proper, or interfere with the making or vending of proprietary medicines, with any exclusively wholesale business, or with the sale by general retail dealers of the following articles: Alum, blue vitriol, borax, carbonate of ammonia, carbonate of soda, castor oil, copperas epsom salts, glauber salts, glycerin, gum arabic, gum camphor, licorice, logwood, rolled sulphur, saltpetre, senna leaves, sublimed sulphur, water of ammonia, or paris green in sealed packages distinctly labeled "paris green, poison." Nor shall any dealer whose shop is more than two miles from a drug store be thus prevented from selling any commonly used medicine or poison which has been put up for such sale by a registered pharmacist.

Sec. 7. Physician's Prescriptions Required for Certain Drugs.—That Section 2337, Revised Laws of 1905, be amended to read as follows:

2337. No person, otherwise than on a physician's written prescription, shall sell at retail aconite, belladonna, digitalis, or nux vomica, or their preparations,

the oils of bitter almonds, cedar, pennyroyal, savin, or tansy, arsenic or any of its preparations, mercury or opium, or any of their poisonous preparations, carbolic acid, chloral hydrate, chloroform, creosote, croton oil, cyanide of potassium, hydrocyanic acid, lead acetate, morphine, the mineral acids, oxalic acid, strychnine, wood-naphtha or any other commonly recognized poison, without affixing to the package or receptacle containing the same a label conspicuously bearing the word "poison," and the name and business address of the seller, and satisfying himself that such poison is to be legitimately used. Any person who fails to comply with any requirement of this section shall be guilty of a misdemeanor.

Sec. 8. Register to be Kept For Sale of Poisonous Drugs.—That Section 2338, Revised Laws of 1905 be amended to read as follows:

2338. No person, either on his own behalf or while in the employ of another, except upon the written prescription of a physician, shall sell or give away arsenic or its preparations, (other than paris green), aconite, belladonna, or nux vomica, or their preparations, cyanide of potassium, hydrocyanic acid, morphine, mercury or its poisonous preparations, opium or the tincture thereof, the oils of pennyroyal, savin or tansy, or strychnine, without first recording, in a book kept for the purpose, the name and address to whom and the amount and kind of poison delivered. Every person who shall violate any provision of this section, give a false name to be recorded as aforesaid, or having custody of any such record book, shall refuse to produce it on demand for the inspection of any officer, shall be guilty of a misdemeanor.

Sec. 9. Penalty for Violation by Druggist.—That Section 2339, Revised Laws of 1905 be amended to read as follows:

2339. Every proprietor or manager of a place where drugs are sold shall be responsible for the quality of all drugs, chemicals, and medicines sold by him, except proprietary medicines and other articles sold in the original packages of the manufacturers. Every person who, by himself or through another, shall willfully adulterate any drug, medicinal substance, or preparation authorized, or recognized by the United States Pharmacopeia, or National Formulary, or used or intended to be used in medical practice, or shall mix with any such article any foreign or inert substance for the purpose of weakening its medicinal power and effect or of cheapening it, or who shall sell the same knowing it to be so adulterated or mixed, shall be guilty of a misdemeanor, the minimum punishment whereof shall be a fine of fifty dollars.

Sec. 10. Punishment For Sale by Other Than Druggist.—That Section 2340, Revised Laws of 1905, be amended to read as follows:

2340. No person, not a registered pharmacist, or a dealer employing and keeping such a pharmacist in active charge of his place of business, shall retail, compound or dispense drugs, medicines, or poisons, or keep or conduct a place of retailing, compounding, or dispensing drugs, medicines, or poisons, or falsely assume or pretend to the title of a registered pharmacist. No registered pharmacist or other person shall permit the compounding or dispensing of prescriptions or the vending of drugs, medicines, or poisons in his place of business, except under the supervision of a registered pharmacist or assistant. Every person violating any provision of this section shall be punished by a fine of not less than

fifty dollars, except in cases where the death of a human being results from such violation, when the person offending is guilty of a felony.

Sec. 11. Annual Fees May be Turned Over to State Pharmaceutical Association.—That the state board of pharmacy may each year turn over to the state pharmaceutical association for the advancement of the science and art of pharmacy, out of the annual fees collected by it, such sum, as it may deem advisable, but not to exceed one dollar for each pharmacist and one dollar for each assistant pharmacist, who shall have paid his renewal fee during such year. Said association shall annually report to said board on the condition of pharmacy in the state.

Approved April 28, 1913.

(To be continued)

THE TRADE-MARK EVIL OF MEDICINAL COMPOUNDS.*

CORNELIUS OSSEWARD, PH. G., SEATTLE, WASH.

In this practical age, in which the spirit of mercantilism dominates and absorbes all thought and action, it is not inappropriate for us, in fact it has become a necessity to give our attention to the conditions created by this all absorbing thought of commercialism.

I think it therefore not out of place or time to present to the Association facts which are of such vital importance to ethical pharmacy, facts which have not been looked into as thoroughly as their importance demands, facts which may not be pleasant reading, but that should nevertheless have our undivided and careful attention and consideration.

I refer to the trade-mark evil pertaining not to the definite substances, but to the compound preparations, the mixtures, the ready-made prescriptions, placed on the market under the various trade names.

Much has been written about the so-called patent medicine houses or proprietary houses, but why has there not been more discussion about our ethical pharmaceutical houses?

A careful analysis of the conditions existing will show you clearly that these very ethical pharmaceutical houses are today the greatest offenders in placing on the market compound preparations, mixtures of all kind, ready made prescriptions to be poured from their bottles into your prescription bottles, and this is called the art of dispensing?

Is it any wonder then that we hear the remarks made: "What need for any education in pharmacy? Any one can be a dispenser, no knowledge is required to pour from one bottle into another bottle."

Let us look into these conditions created by these houses and not deny the existence of these evils because their recognition is disagreeable.

In looking over the proceedings of the American Pharmaceutical Association for several years past, we find many articles in regard to dispensing pharmacy.

*Read at the 60th Annual Meeting, Denver, 1912.

Vol. 46, page 438. Mr. Beal, then chairman of this section, in his address said:

"It has not been uncommon of late years to learn from various sources that dispensing pharmacy has about reached the end of its existence as a separate calling, and that forces are now at work which must produce its speedy disintegration, and eliminate it from the list of recognized occupations whereby men may gain a livelihood.

"The question which this prediction suggests is one of supreme importance and may well challenge our serious consideration." Furthermore, he says, "That dispensing pharmacy is at present in a very unsettled and unsatisfactory condition we all agree, but as to the causes of these conditions or as to the remedies which should be adopted for its improvement, there is a wide difference of opinion."

Ex-President Oldberg in his address to this Association, Vol. 57, page 426, of the proceedings says "The chief cause of the degradation of the retail drug business is the ruinously excessive number of drug stores," and he might have added that the excessive desire of the manufacturing pharmaceutical houses to monopolize everything pertaining to pharmacy, even dispensing, under the successful system of trade-mark mixtures has been and is today the greatest hindrance of a more liberal use by the physicians of U. S. P. and National Formulary preparations.

In other words, instead of having the proprietary houses only to flood the market with these compounds, we have now in addition also every ethical pharmaceutical house to prescribe for the physician and to dispense for the pharmacist.

Do you wonder that dispensing pharmacy is in an unsettled and unsatisfactory condition? Let us consider for a moment the results of flooding the market with these many compounds.

What good has been obtained from these trade-mark compounds? Has pharmacy been improved, has there been more scientific knowledge obtained in placing these mixtures on the market?

These are fair questions to ask, but the only benefit derived, as far as I can judge, is by these manufacturers in the shape of dividends at the close of the year.

The disadvantages, however, are many, and of such far reaching consequences, as far as ethical and scientific pharmacy is concerned, that this Association cannot afford to ignore the importance of these unscientific methods.

First, by flooding the market with these various compounds, these ready-made prescriptions, it has caused many physicians to overlook their materia medica and therapeutics, which has not been to the benefit of their patients.

Second, it is, I believe, the direct cause of the physicians doing their own dispensing.

Third, it has encouraged substitution, for the greatest number of these ready-made prescriptions are nothing more or less than substitutions for some popular proprietary remedy.

Fourth, and last but not least, I believe is the most serious result and the one cause which should have our careful attention, for in this case neither the pharmacist nor the public at large is getting a square deal.

Think of the multiple compounds each manufacturer controls through this system of trade-mark compounds, a similar product to replace that of his many competitors.

Look on your shelves today—a dozen one-pint bottles of the so-called ethical cough mixtures from as many different ethical pharmaceutical houses all practically the same, and which could for all practical purposes be done away with or replaced by our National Formulary preparation of Syrup White Pine Compound.

Every one of these cough mixtures have as their most active constituent either morphine, codeine or heroin, the only important difference being the name: Syr. Tolu and Heroin Co.; Expectorozone; Elixir Pinus Co.; Elixir Pinus Co. with Morphine; Elixir Pinus Co. with Codeine; Elixir Pinus Co. with Heroin; Sedatole; Pruno Codeine; Creo Terpin Co.; Red Spruce Codeine Expectorant; Cerose; Heroterpine; Codeine Cough Sedative; Glycerole Heroine Co.; Syr. Cocillana Co.; Anodyne Pine Expectorant; Anodyne Pine Expectorant with Heroin, and many others of a similar nature.

And this pertains only to the cough mixtures; other compounds, too many to mention, are found in every drug store to be dispensed as called for.

Now the important question arises, what condition are these compounds or complex mixtures in after standing on your shelves for an indefinite time through the various changes of temperature, especially in our warm climates?

Does it seem reasonable to expect that these complex mixtures will remain unaltered under these changeable conditions?

Some of these manufacturers admit themselves that changes are liable to occur, for on the bill head of a certain firm may be found the following notice in red ink:

"We cannot undertake to accept for credit or exchange broken or open packages where stoppers (caps or corks) have been removed or seals broken, but will exchange any of our preparations, in original or unbroken packages, *which may have undergone changes from causes impairing their efficacy.*"

I ask you in all candor is the public getting freshly prepared medicine when we positively know that these compounds which are prescribed have been standing on our shelves for in many cases one or two years, as is the case in many of our small pharmacies, under various conditions of climate.

Again, do the physicians know these conditions? I fear not, for I am sure if they did, they would not trust themselves in prescribing these complex mixtures so freely.

Can we wonder that so often the physician does not get the results which he might reasonably expect had such mixture been recently dispensed (by dispensing I mean the several ingredients of which the mixture was composed) mixed when it was prescribed.

At the last meeting of the American Medical Association the house of delegates adopted the following revised principles of medical ethics relating specifically to the practice of pharmacy which reads:

Section 4. By legitimate patronage, physicians should recognize and promote the profession of pharmacy; but any pharmacist unless he be qualified as a physician, who assumes to prescribe for the sick, should be denied such countenance and support.

Moreover, whenever a druggist or pharmacist dispenses deteriorated or adulterated drugs, or substitutes one remedy for another designated in a prescription, he thereby forfeits all claims to the favorable consideration of the public and physicians.

A curious fact which I could not help but notice while looking up some data

as regards these trade-mark compounds was that no reference was made in any of the numerous articles in regards to the possibility of deterioration of these compound mixtures before being prescribed and dispensed.

The only mention I did find was in a pamphlet published by the Council of Pharmacy and Chemistry of the American Medical Association. It is a booklet of about a hundred pages, and is too long to read at this time, but with your permission I want to read a few lines pertaining to our subject.

"The physician is not supposed to be a pharmacist, and if he were, he has neither time nor inclination to examine all the products he is asked to prescribe, or to inquire into the standing of those who exploit them.

"The number has become so great that the attempt to separate the good from the bad is bewildering, and no one individual is courageous enough even to try. The result of it all is that the educated, thinking physician who is honest with himself and with his patient refuses to prescribe any proprietary mixture; he classifies them all as secret nostrums and lets it go at that.

"Ready-made combinations of remedies may be valuable in many cases, *but to say that such combinations of drugs in fixed proportions fit any large share of the cases for which they are specially recommended by their makers is to say that the services of the physician are to a great extent superfluous.*

"Machine prescribing is quite incompatible with high ethical standards and professional attainment in medicine.

"Prescribers should know the virtue of each individual drug they use. They cannot attain that knowledge from the effects produced by mixtures.

"Whenever a physician specifies in the prescription a certain make of preparation, he takes upon himself the responsibility for that preparation. Any reputable pharmacist will, of course, dispense precisely what is ordered, but he cannot be held responsible for a product the composition and character of which are not fully known.

"Only the manufacturer knows what materials were used, the proportions employed, and the method of preparation. Manufacturers have their own formulas and processes, which are not known to the dispenser. The date *when the preparation was made and the manner in which it may have been kept since that date can not be known.* The preparations ordered by prescribers to be those made by some specified discoverer or manufacturer are almost all of the class known as proprietary specialties, those for which special superiority is claimed without any tangible evidence in support of that claim. Such preparations are, wholly or partially, secret nostrums subject to no verification or control, and when dispensed, may be right or wrong, old or new.

"They usually pass through several hands before they reach the dispensing pharmacist who must accept them unless they bear unmistakable external evidence of being in bad order.

"Pharmacists freely admit that there are many medical products which can be more successfully made in manufacturing laboratories having facilities which the dispensing pharmacist cannot have; but the claims so often put forward by the manufacturers that only a few medicinal preparations can be as well made with the facilities generally found in reputable retail pharmacies is as grossly exaggerated and ridiculous as the claim of the maker of any proprietary preparation that he possesses some valuable secret by which he alone is enabled to produce the remedy in proper condition.

"Medicines are most reliable when fresh. The most active and important generally deteriorate more rapidly than others.

"Any preparation, therefore, that can be made by any competent pharmacist should clearly be made by the dispenser in order that he may be able to dispense a fresh product.

"Then only can he with justice be held responsible for it.

"Any preparation about which the maker fails to tell the whole truth should not only be suspected; it should never be used.

"In view of the widespread acclaim with which the movement, generally referred to as the propaganda in favor of U. S. P. and National Formulary preparations, has been received, it is of vital importance that it shall not be misdirected or misunderstood.

"Properly interpreted it means the application of correct ethical principals to the prescribing and dispensing of medicines, and proper and mutual relations between physician and pharmacist.

"So far as it concerns the physician it means that he will permit neither self-interests, nor the love of ease, nor the plausible tongue of the detail man of the manufacturer of medicine to lure him away a hair's breadth from the path of duty to himself, his profession, and his patients.

"To the pharmacist it means that he must do all in his power to render effective service, and respect to the fullest extent the rights of the physician and the sick.

"Will the pharmacist meet these demands upon him in the right spirit? Will he do his

full duty because he sees it to be right, or will he support the reform movement solely in consideration of assurances of an increased prescription business?

"But pharmacists have the right to expect equally honorable treatment from the medical profession. They have the right to expect that physicians shall not deprive the pharmacist of his legitimate and honorable occupation and his means of livelihood.

"Physicians cannot keep such a complete stock of medicine in their office that they do not find it necessary to write occasional prescriptions. Pharmacists who can and do keep a complete supply, who are able to judge of the quality of drugs and medicines, who renew their stock frequently enough to have all remedies fresh and reliable, and who have all the necessary facilities for accurate dispensing, cannot live on the meager profits of such occasional prescription."

From this it is plain that the American Medical Association, through the Council of Pharmacy and Chemistry, realize the possibility of inactive, deteriorated, or stale mixtures being dispensed. It is also plain that the greater majority of the medical profession has not and does not realize this danger, and it is also a fact, I believe, that if they did realize or understand the possibility of getting stale, deteriorated, or less active drugs when prescribing these compounds, these ready-made prescriptions, that they would not so freely prescribe them, at least not without first obtaining some information in regards the age of these particular compounds.

A WORKMAN'S PARADISE.

According to the *Literary Digest,* William D. Hawood pictures the working quarters of the mill hand, after the Industrial Workers of the World shall have gained control of the machinery of government, as follows:

"There will be a wonderful dining-room where you will enjoy the best food that can be purchased; your digestion will be aided by sweet music, which will be wafted to your ears by an unexcelled orchestra. There will be a gymnasium and a great swimming-pool and private bathrooms of marble. One floor of this plant will be devoted to masterpieces of art, and you will have a collection even superior to that displayed in the Metropolitan Museum in New York. A first-class library will occupy another floor.

"The roof will be converted into a garden. There beautiful flowers will fill your eyes and their sweet perfume your nostrils. The workrooms will be superior to any ever conceived. Your work chairs will be morris chairs, so that when you become fatigued you may relax in comfort."

Section on Practical Pharmacy and Dispensing

Papers Presented at the Sixty-First Annual Convention

THE MAKING OF TABLETS BY THE RETAIL DRUGGIST.

BERNARD FANTUS, M. D., CHICAGO.

Efficiency, elegance, and economy, I take it, are the three points of view from which any class of pharmaceuticals must be judged in the determination of its value. Efficiency, of course, comes first. No matter how expensive the medicament, if it produces the desired result better than anything else, it is the one to be chosen. If, however, we have the choice between an elegant and a disagreeable preparation of equal efficiency, common sense will teach us to select the pleasant one. Economy, though the last and least consideration in medicine, is also a matter of importance; for obviously that form of medicament should be chosen that is most economic, both as to original expense and as to trouble of preparation.

Tablets are a dosage form of recent introduction that competes with older and better established dosage forms, such as powders, pills and capsules. Before anything new can replace the old, it must establish its superiority. What claims for consideration have tablets to present? In judging them from the three aforementioned standpoints, we find that there is no question about their efficiency, if they are accurately prepared, excepting in case of volatile substances, such as phenol or creosote, which, of course, will not remain in the tablet, even if they are put into it in proper amount. Compressed tablets made from insoluble substances can, contrary to the statement contained in text books, be made to disintegrate readily enough, if from 15 to 20 percent. of starch be added to the powder; the starch, on becoming moistened, swelling with great force and causing the tablet to fall to pieces. Indeed, well made tablets disintegrate more readily than do pills or capsules. While ordinary tablets are not more pleasant to take than are pills or capsules, they are probably more convenient for administration than are powders. What has, however, decided the present status of the tablet is the economic question. Though introduced by Dr. Robert M. Fuller of New York before the Academy of Medicine on February 21, 1878, (published in "New Remedies," March, 1878, p. 69), in a paper entitled: "Dose-Dispensing Simplified," the simplification was evidently not such that the retail druggist could notice it; for tablets have not as yet established themselves in general pharmaceutic practice. The preparation of tablets in large quantities, on the other hand, does offer economic advantages over other dosage forms to such a degree that tablets are the favorite solid dosage form with the manufacturer, who finds ready market for them among dispensing doctors. The retail druggist has been opposed to

the prescribing of tablets by doctors, for tablets have been considered not suitable for extemporaneous preparation, as they require drying, whether made by the tablet triturate process, in which the drying must be done after the tablet is finished or they be made by compression, when the powder is granulated by being moistened and must be dried before being suitable for compression. Furthermore tablets require a special apparatus, with which druggists as a rule have thus far not equipped themselves. Hence, should a doctor prescribe tablets, the druggist must buy them ready made, which increases the stock of ready made goods that he is forced to carry. The druggist asks why tablets should be prescribed, when freshly made pills or capsules are just as good, if not better, and economically much more favorable to him.

There are, however, three influences at work destined, I believe, to change the relation of the retail druggist to the tablet, they are: First, the use of a solid fat as cohesive and lubricant; second, candy medication; third, inexpensive tablet machines.

The employment of a solid fat as cohesive and lubricant was suggested by A. Schleimer in "The National Druggist" (Feb., 1909, p. 54), who advocates the use of cacao butter in lieu of granulation of the powder and subsequent drying. This brings tablets into the category of extemporaneous preparations. All that is necessary is to add three percent. of cacao butter to the powder, and it is ready for immediate compression in a tablet machine. Having found that cacao butter is liable to become rancid on keeping of some of the tablets made with it, I experimented to find a substitute devoid of this tendency, and found it in paraffin of low melting point. For tablets that are not to be kept for any length of time, cacao butter is preferable, as it melts readily and is digestible. The amount of paraffin however that enters into the composition of each tablet is so small that, in spite of its indigestibility, it seems to me it could not meet with any but theoretic objection. Either of these materials, in form of fine shavings, is added to the extent of three percent. with just sufficient trituration to distribute fairly well. Excessive trituration lessens the efficiency of the lubricating agent. If the tablet has a tendency to stick to the punches, the material can be worked better, if a little talcum, say three percent. is added to the powder by stirring it in with a spatula rather than by trituration. This process renders tablet making no more difficult or time-consuming than the making of pills or capsules. It is true, that there are a few materials that do not lend themselves well to this simple process. These would have to be worked up according to the old process, which is very briefly but with sufficient detail described in a booklet by Frank Edel on "How to Make Tablets," published by the Spatula Publishing Co., Boston, 1896; or, more elaborately, in Joseph R. Wood's "Tablet Manufacture," (Lippincott & Co., Philadelphia, 1906.) This much may be stated with confidence, that a druggist equipped with an inexpensive tablet machine can deliberately cut out of his stock all tablets, excepting those that are very frequently called for.

"Candy Medication" will, I believe, become, in future, the children's medication of choice. Would it not be delightful to give all or nearly all our medicine to children in the form of sweet tablets, similar e. g. to those of phenolphthalein that are now, under various names, used so extensively. As a result of my studies, I

can assure you that this is entirely possible. By taking advantage of the fact that some medicines are practically tasteless, that many of the isolated active principles of drugs are easily disguised, and that modern synthetic chemistry has enriched our resources by the production of a considerable number of tasteless or almost tasteless and yet active substances, it has been possible for me to show that as many as four or five dozen different drugs can be worked up into perfectly delicious, not merely palatable, sweet tablets. To furnish a basis for further discussion and experimentation, I have published a "Candy Medication Formulary" in the Journal of the National Association of Retail Druggists, May 22 and 29, and June 12 and 19, 1913. Since then, it has been my good fortune to have had my attention directed to John Uri Lloyd's "Alcresta" alkaloids, which enable one to give the bitterest alkaloids, even strychnine, in "candy form." Having discussed the subject of sweet tablets in another paper I will refrain from occupying your time for its consideration here, excepting to point out that sweet tablets meet all three requirements first laid down. They contain an active dose for a child; though, in case of some medicaments, even an adult dose could be administered in this form, if desired. It is, however, for children that this form is most especially needed. Most adults can swallow pills or capsules. These sweet tablets are more elegant than any other class of preparations in the drug store. It is true, it has been questioned, whether powders made with sugar would not be taken by children as readily as these tablets. Anyone, who would take the trouble to try, would soon find out that the tablets are much more readily taken than powders of the same composition. You do not find powdered sugar in the confectioner's shop. The confectioner goes to a good deal of trouble to make the sugar more pleasant by attractive shape, color and flavor, all in order to increase the relish with which the sugar would be taken. There is really less necessity of making sugar more attractive to a healthy youngster than there is of making medicine as attractive as possible for the sick child. Why not cultivate relish in medication? There is no question of its being possible for the retail druggist to prepare them economically. Mr. J. B. Galloway of Chicago, who has filled most of my prescriptions for sweet tablets, did not find it necessary to charge more for them than he would for as many pills or capsules.

Other form of candy medication has been thought of. Sir James Sawyer, for instance, published in "The Lancet" of August 12, 1911, p. 435, a process for the production of what he calls "cremulae," or medicated chocolate creams. They are prepared by evaporating a mixture of sugar and of milk to the consistency of paste, into which various medicaments might be incorporated, and which is then covered with chocolate, as in the popular chocolate drop. I have quite a number of years prior to Sawyer's publication, prepared medicated chocolate creams as well as other forms of medicated candy. I have, however, come to the conclusion that no other form would be quite as practical as the sweet tablet, most especially for extemporaneous preparation by the retail druggist.

As to tablet machines, Whitall Tatum Co's "No. 25" Tablet Machine is, surely, within the reach of any druggist. All the tablets in my experiments were prepared with a machine of this type at the pharmacologic laboratory of the College of Medicine of the University of Illinois. Should a more rapidly working ap-

paratus be desired, the J. F. Stokes Machine Co., of Philadelphia, could supply it, in form of their "Eureka" Tablet Machines at a figure by no means prohibitive.

In conclusion, then, I would point out that it will pay pharmacists to equip themselves with a tablet machine, first of all, to be able to discontinue carrying in stock a large number of miscellaneous tablets, by being forced to order a bottle of 100, whenever a dozen or two of tablets are called for; and secondly in order to be able to prepare sweet tablets, a form of "candy medication" that physicians will readily take up with, as soon as they are acquainted with them, and a reliable source of supply has been secured.

DEPARTMENT OF MATERIA MEDICA AND THERAPEUTICS, COLLEGE OF MEDICINE, UNIVERSITY OF ILLINOIS, CHICAGO.

PERSONAL LIBERTY IN BERLIN.

Americans who prize their "personal liberty" very highly have been in the habit of ridiculing what seem to them the petty regulations of the police forces of large German cities. The frequency with which the American tourist in Germany sees the sign beginning, "It is forbidden," gives him the notion that his movements are unnecessarily restricted. Surely, at least, such regulations as the following, in force in Berlin, will appear ludicrous to the gangsters of our large cities who may carry guns with immunity and rob at their hearts' content:

"Persons may not walk more than three abreast or stop or congregate for any extended period of time.

"Persons with umbrellas or walking sticks must not carry or swing them in any manner likely to imperil the safety of passers-by.

"No windows or doors of houses, flats, shops or restaurants in which music is being played may be kept open.

"No whistling, singing, shrieking, shouting, or loud talking of any kind likely to endanger the quiet of the streets is to be permitted.

"Teamsters in charge of wagons, teams, or trucks loaded with resounding metal of any kind are forbidden to drive in a manner calculated to cause nerve-shattering noises.

"No paper, remains of fruit, cigars, or cigarettes may be thrown into the streets.

"The dragging of clothes of any kind—women's dresses or anything else capable of producing dust—is prohibited.

"Householders are required in winter to keep the footpaths in front of their premises clear of snow and ice between 7 a. m. and 8 p. m. After 8 p. m., if the sidewalks are slippery, sand or ashes must be sprinkled."—*Daily Newspaper.*

Section on Historical Pharmacy

Papers Presented at the Sixty-First Annual Convention

REPORT OF THE HISTORIAN.

CASWELL A. MAYO, NEW YORK.

. The most interesting event of the year from an historical point of view has been the formation in Paris of a society devoted to the study of Pharmaceutical history, of which M. Eugene Guitard is the secretary and M. Dorvamt, president. M. Guitard has published a most interesting volume commemorative of the 50th anniversary of the foundation of "L'Union Pharmaceutique," which covers not only the history of that journal, but also covers two centuries of the press in the service of pharmacy. I have pleasure in directing attention to a copy of this volume, which I have received through the courtesy of M. Guitard.

The value of historical study has been recognized for the first time in an international congress by the organization of a section devoted to medical history in the Seventeenth International Congress which has just been held in London. In connection with this congress an exhibit was made by Mr. Henry S. Wellcome of a number of articles connected with the history of medicine, including books, portraits, surgical instruments, etc. This exhibit has been spoken of in terms of the highest praise both in the medical and lay press, and it is intimated that it may eventually form the nucleus of a permanent historical medical museum. Mr. Wellcome has long been a member of the American Pharmecutical Association and it is not improbable that his interest in the historical aspects of medicine has been stimulated by the work of our own historical section, in which he has always taken an interest.

Another interesting event somewhat nearer home is the recognition of the importance of historical pharmacy by the creation of a Chair of Historical Pharmacy in the School of Pharmacy in the State of New Jersey and the election to the professorship of a former chairman of this section, Otto Raubenheimer.

An interesting and praiseworthy precedent was sent at the March meeting of the New York College of Pharmacy, which was devoted to memorial notices of the members of the college who had died during the past year. Complete and sympathetic accounts of the service to pharmacy rendered by the deceased members. These accounts written and read by our honorary president, Thomas F. Main, secretary of the New York College of Pharmacy, were illustrated with lantern slides of portraits of the members. It is with pardonable pride that we point out that these men who had done so much for pharmacy locally were nearly all members of this Association. A copy of the Memorial issue of the Alumni Journal containing these accounts is presented herewith.

Endowments and Scholarships in Pharmacy.—A questionnaire concerning scholarships and endowment in pharmaceutical colleges was sent out by the Historian and the data collected will be deposited with the historical collection for future use. A brief summary being given here.

We learned but of two fellowships, one in the University of Kansas and one in the University of Michigan. Scholarships are maintained in the following schools: University of Kansas, University of Washington and University of California, and in the colleges of Massachusetts, Philadelphia, New York, Brooklyn and Pittsburgh. The Chairman of this section at the request of the Historian, has prepared a history of the funds of the Massachusetts College of Pharmacy, which I shall take the liberty of reading in this connection for the information and inspiration of other institutions.

HISTORY OF THE FUNDS OF THE MASSACHUSETTS COLLEGE OF PHARMACY.

JOHN G. GODDING.

The first Endowment to the Massachusetts College of Pharmacy was for $2000.00, willed in 1872 by Mr. Charles French, a prominent Apothecary in the North End of Boston, and Vice-President of the Institution from 1839 to 1844. This was used in building the present College structure. In 1896 the College voted to restore this Fund which June 1911 amounted to $3404.35.

In 1892, Mr. James S. Melvin, another well-known Apothecary, died. He was a Trustee of the M. C. P. for a number of years. He left by will $1000.00. This has accumulated to $1455.00.

Miss Mary Jane Aldrich became interested in a clerk in the employ of Mr. S. A. D. Sheppard and a student at the M. C. P., and it is probably through some word or solicitation of Mr. Sheppard's that Miss Aldrich at her death in 1892, willed the College $7250.00, stipulating that 5 percent of the income should be added each year to the principal. This fund is now $10,492.80.

Mr. Charles Mead of the type of Messrs. French and Melvin and a former member of the M. C. P. died leaving a will in which the Massachusetts College of Pharmacy was to receive $2500.00 at the death of the person named in the will, which was in 1896. This now amounts to $3348.25.

Prof. B. F. Davenport, our first Professor in Analytical Chemistry, donated $125.00 to be known as Davenport Library Fund, the income to be expended on the Library. This has accumulated to $365.70. Dr. Davenport attends many of the functions of the College up to the present time.

The funds, each bearing the name of the donor, came in cash and were placed in the hands of three Trustees who had charge of investment and income.

Mr. Warren B. Potter of the firm of Weeks & Potter, well known Wholesale Druggists in former years and a warm friend of Mr. S. A. D. Sheppard, was much interested in the erection of the present College Building and suggested many ways to raise the debt. When he died his entire estate was willed to his wife, Sarah E. Potter, he having expressed his wishes to her as to its disposal.

Mrs. Potter died in 1904. She bequeathed to the Massachusetts College of Pharmacy $50,000.00 and numbered it among the residuary legatees. The stipulation was that the same should be called "The Warren B. Potter Fund" and that a memorial of this fund in the form of a bronze tablet, suitably inscribed, be fixed in a conspicuous place in the College Building after receiving this bequest. The College placed the bronze tablet designed by Cyrus Dallin in the hall near entrance, at a cost of $3500.00. The amount received from Mrs. Potter's estate was $196,699.69, and now amounts to $203,968.78.

This fund came to the College in railroad bonds, stocks, shares in commercial buildings and industrials. After receiving this fund the College increased the number of Trustees

of Funds to five, one to be elected each year to serve for five years. There was also created a Building and Contingent Fund into which the income from all funds, excepting the one noted, is placed. Up to this time the income from other funds was added to the principal. It also established the rule that all securities purchased or held should be such as are approved by the Savings Bank Commissioner of the Commonwealth of Massachusetts. The Trustees were given time to dispose of such securities as did not meet these requirements which has been done without any loss to the funds. The investments are now principally in railroads, municipal and state bonds and nearly all are registered to the Treasurer of the M. C. P. as to principal.

The total value of funds is $224,782.88 and the average income is about 4%. The Trustees of the funds meet monthly and have rules for the safe handling of these funds.

The policy of the College is to keep these funds intact, using only the income from the Building and Contingent Fund. From this we cleared the mortgage from our present building ($30,000.00), erected the Potter Memorial and last June bought land for a new building at a cost of $40,000.00, paying $15,000.00 cash.

You inquire what use we propose to make of our income. Besides what has been pointed out we are now intent on paying for the land and have a Building Committee in charge of the plans and requirement of the prospective new building, and a Ways and Means Committee in charge of the raising of funds for the building. These Committees have recently been appointed by President Packard.

With what we can realize from our present property and the hope of receiving assistance from our friends our next aim will be the beginning of a new building.

J. G. GODDING, Treasurer.

PHILADELPHIA COLLEGE OF PHARMACY.

Scholarships.—Twenty-nine scholarships are possible under the awards of the Scholarship Committee. Usually a scholarship is awarded to the student for the three-year course, making seventeen which are awarded each year. They are as follows in the order of their founding:

Peter Williamson Scholarship, 3 lecture tickets.
Robert Bridges Scholarship, 3 lecture tickets.
John M. Maisch Scholarship, 3 lecture tickets.
Thomas H. Powers Scholarshp, 3 lecture tickets, 2 laboratory tickets.
*Keasby and Mattison Scholarship, 3 lecture tickets and 2 laboratory tickets.
Edward C. Jones Scholarship, entitles the student to 2 laboratory tickets.
Henry and W. P. Troth Scholarship, 3 lecture tickets and 2 laboratory tickets.
*E. T. Dobbins Scholarship, lecture, laboratory, and recitation tickets.
James T. Shinn Memorial, lecture, laboratory, and recitation tickets.
Class 1884 Memorial, lecture, laboratory, and recitation tickets.
*Thomas S. Wiegand Scholarship, lecture ticket, laboratory and recitation tickets.

The College also allots six scholarships a year to the Philadelphia Board of Education; one to be applied to each of the following schools: Boys' High School, Girls' Normal School, Girls' High School, Northeast Manual Training School, Central Manual Training School, and Southern Manual Training School, making to the Board of Education 18 scholarships in course each year. They must be allotted to graduates of these institutions who have signified over their signature their intention to continue in the practice of pharmacy or its allied branches, and to make it their life work.

The E. T. Dobbins Scholarship is limited to students who are residents of New Jersey.

JOSEPH P. REMINGTON.

It will be observed that the term "scholarship" here is used in its widest sense, including free tuition as a scholarship, though such use of the term is hardly justified from the University School point of view, since in many state universities tuition is free to all residents of the state.

*Awarded after competitive examination.

College Libraries.—In connection with the work of the Historian as a member of the Library Committee of the New York College of Pharmacy, Columbia University, his interest has been aroused in pharmaceutical libraries. He, therefore, sent out in March a questionnaire on pharmaceutical library methods, the answers to which will prove useful to those interested in this particular subject. The answers received from the university schools can hardly be compared with those furnished by independent colleges, for the university school rarely has a separate pharmaceutical library, depending upon the university library. The number of volumes contained in the separate pharmaceutical libraries vary from a few hundred in the younger institutions up to 12,000 in the library of the Philadelphia Library of Pharmacy. This number refers to the bound volumes only, and does not include dissertations and pamphlets.

The New Orleans College of Pharmacy has 300 volumes; the School of Pharmacy of the Medical College of Virginia 500; the California College 971; University of Washington 1000; Iowa University School 1015. The University of Minnesota 1500; University of Pittsburgh 1700; Vanderbilt University 1300; University of Kansas 2837; Illinois 2500; Brooklyn 3500; New York 4500; Massachusetts 7177; Michigan 5500; Philadelphia 12,000. The Pharmaceutical Institute of the University of Berlin has 3300 volumes and 4000 dissertations, showing that our American school libraries as a whole compare fairly well with that of this institute.

The greatest of all pharmaceutical libraries is the wonderful Lloyd Library, which several of us had an opportunity to inspect on our visit to Cincinnati last week. This institution has nearly 39,000 bound volumes and 50,000 pamphlets, housed in two large buildings and maintained at the expense of the founders—Lloyd Brothers. It is difficult to find words in which to adequately express our sense of obligation to Professor Lloyd, our honored ex-president and his brothers for their altruism in founding and maintaining this unique institution.

Greek Letter Fraternities.—A beginning has been made by the Historian of the collation of information regarding the history of the Greek Letter Fraternities in Pharmacy. Letters were sent to all the colleges of pharmacy in the United States for information on this topic, which was followed up by individual correspondence with members of the several organizations. The data collected will be deposited in the archives of the association. The Phi Delta Chi fraternity will always have a special interest for the American Pharmaceutical Association, because of the fact that it was founded by our honored and beloved ex-president, Albert B. Prescott, of the University of Michigan. Chapters of this Order have been established in sixteen different colleges and universities and it issues an interesting quarterly, The Communicator, from Boston.

The Kappa Psi fraternity has 31 chapters and is in a most flourishing condition, maintaining a very creditable organ—"The Mask" which is published quarterly at Menosha, Wis.

One of the younger frats is the Tau Epsilon, founded about four years ago at the New York College of Pharmacy by J. M. Breitenbach, Phar. D. Full data regarding these various fraternities are deposited with the historical collection.

The Historian also begs leave to acknowledge receipt of a number of photographs of groups of members of the various Pharmacuetical organizations, a

list of which appear below. These will be placed in the archives of the association.

Particular thanks are due to Hugo Kantrowitz of New York, for an interesting album of snapshots of pharmacists, taken by him. This album is shown and will be observed with interest by all of those who have attended recent meetings of the association, as it includes a number of excellent pictures of the Boston and the Denver meetings.

PHOTOGRAPHS ON FILE FOR HISTORICAL SECTION.

PRESENTED BY C. A. MAYO.

1. Members of National Association of Boards of Pharmacy.
2. Dinner of New York Retail Druggists' Association.
3. Ohio Delegates to Milwaukee Meeting of N. A. R. D.
4. Presidential Party, Milwaukee Meeting N. A. R. D.
5. The A. Ph. A. at Glacier Lake.
6. Delegates to the Milwaukee Meeting of the N. A. R. D.
7. The Philadelphia Delegates to the Milwaukee Meeting of the N. A. R. D.
8. Members of the Commercial Travelers' Auxiliary of the New York State Association at the Rochester Meeting, June 25, 26, 27.
9. New York State Pharmaceutical Association at Manitou Beach, near Rochester.
10. Members of the New York State Board of Pharmacy.
11. Group of Four: Dr. and Mrs. Whelpley, Mr. and Mrs. William Mittelbach.
12. Print: Snapshots at the Denver Meeting of the A. Ph. A.
13. Print: Reminiscences of the Denver Meeting of the A. Ph. A.
14. Print: Snapshots at the Milwaukee Meeting of the N. A. R. D.
15. Microscopic Laboratory of the New York College of Pharmacy.
16. One of the Crude Drug Drying Closets. Digitalis Showing. College of Pharmacy, University of Minnesota.
17. A Section of the Pharmacognosy Class Collecting Digitalis Leaves in the Medicinal Plant Garden: College of Pharmacy, Univ. of Minn.
18. Photograph of George Reimann and his four sons.
19. Group of Three American Chemists: Prof. J. P. Remington, Dr. S. P. Sadtler and Dr. W. E. Hillebrand.
20. Two Pharmacological Chemists: Dr. Reid Hunt and Dr. J. J. Abel.
21. Prof. Dr. A. Bernthsen, Gr. Bad. Hofrat, Direkter Bad. Anilin und Soda Fabrik, Mannheim.
22. Prof. W. H. Perkin, Manchester, England, and Dr. Carl Duisberg, Director of the Farbenfabriken of Elberfeld, taken at the Eighth International Congress of Applied Chemistry.
23. Group: Dr. Carl Duisberg, Dr. John H. Findley, President College of the City of New York, and Herman A. Metz.
24. Group of American Chemists: Dr. Charles Baskervill, Professor of Chemistry, College of the City of New York; Dr. S. A. Tucker, Professor Electro Chemistry, Columbia University; Dr. A. S. Cushman, Director Carnegie Institute for Research; Dr. E. Coggeshall, Chemical Engineer.
25. President Nichols and Sir William Ramsay on Steamer Excursion, September 7.
26. President Nichols Enjoying a Cigar on Steamer Excursion, September 7, 1912.
27. U. S. Government Chemists: Dr. W. D. Bigelow, Chief, Food Division, Bureau of Chemistry; A. Seidell, Public Health and Marine Hospital Service; E. W. Boughton, Assistant, Bureau of Chemistry; F. C. Cook, Assistant, Bureau of Chemistry.

CENTENARY OF MEN FAMOUS IN PHARMACY.

OTTO RAUBENHEIMER, PH. G., BROOKLYN, N. Y.

In compliance with the promise in my address as chairman of the Section on Historical Pharmacy, at the Denver meeting, I herewith present short biographical sketches of men born in 1813, men who were pharmacists or chemists or botanists, men who have greatly helped in the evolution of pharmacy and men to whom pharmacists should forever be thankful.

The celebrated pathologist, Rokitansky, once said, "An dem Lichte der Alten

sollte die Jungend ihre Fackeln entzûnden," which freely translated means, "Let the young light their torches on the fire of their forefathers." Let the deeds of the men before us serve as an example and let us try to follow in their footsteps! Let these short biographies prove instructive as well as edifying, to the profession and to the public!

The compilation of these biographies has been made from the following works:

Gallerie, by B. Reber.
Geschichte der Pharmazie, by Hermann Schelenz.
A History of Chemistry, by Von Meyer—McGowan.

and last, but not least, from the Proceedings of the A. Ph. A.

In spite of the so-called "unlucky 13," the year 1813 was productive more than usual of men who have become prominent in pharmacy, chemistry and medicine.

WILLIAM B. CHAPMAN.

(1813-1874)

He was born at Pennypack Hall, near Philadelphia, June 5, 1813. Graduated from the Philadelphia College of Pharmacy 1834 and moved to Cincinnati in 1835, where he conducted a very successful retail pharmacy. In the spring of 1839 he obtained the degree of M. D. from the Ohio Medical College. He joined the A. Ph. A. in 1851 and was elected President at the Cincinnati meeting in 1854. During the war he was appointed surgeon of the United States army, being stationed at Camp Dennisson. In 1872 he was elected professor of pharmacy in the Cincinnati College of Pharmacy and was also appointed a member of the pharmaceutical board of examiners. At the time of his death, October 10, 1874, he was the oldest pharmacist in Cincinnati and held a high rank in the profession.

JOHANN RUDOLF WILD.

(1813-1868)

He was born on January 10, 1813, and served as apprentice in his father's pharmacy, the "Sonnenapotheke," in Kassel. Later he finished his pharmaceutical education under the celebrated pharmacist W. W. F. Wackenroder, in Jena. In 1849 he succeeded his father in the pharmacy at Kassel. He was the author of the following works:

"Relation of Magic to Alchemy, Astrology, etc. Kassel 1841."
"Description, Preparation, and Testing of Medicaments, Kassel 1842."

Wild was a member of the Revision Committee of the Pharmacopoeia of Hanover in 1861.

FRIEDRICH SCHÖDLER.

(1813-1884)

Originally a pharmacist, he took the degree of Doctor of Philosophy and devoted himself to chemistry. At Tübingen in 1839, he translated into German, the master-work in pharmacy of its time, namely, "Traite de Pharmacie," by E. Soubeiran, the celebrated chief pharmacist of the hospitals in Paris. This book was published by C. F. Winter in Heidelberg, 1839, and became one of the best known pharmaceutical works in Germany. Schödler also obtained great popularity through the publication of his "Book of Nature." He became director of the Realschule in Mainz.

CARL FRIEDRICH RAMMELSBERG.

(1813-1899)

Was born in Berlin in 1813 and studied pharmacy in the "Rote Apotheke" and passed his state examination in 1834. Thereafter he studied chemistry under the celebrated Mitscherlich and Rose. In 1840 he established the Private Chemical Laboratory, and in 1851 became assistant professor at the Technical College, and in 1874 director of the second chemical laboratory at the university. In 1891 he retired and died December 29, 1899. His researches greatly enriched inorganic and especially mineralogical chemistry. Rammelsberg helped very much in the development of quantitative analysis. He determined the atomic weight of molybdenum, prepared phospho-molybdic acid and ammonium phospho-molybdate. During his time the rich deposit of potash salts was discovered in 1860 at Stassfurt. Rammelsberg called attention to the high percentage of potash which was left in the waste products, the so-called Abraumsalze, which were then thoughtlessly thrown away. By the evaporation and crystalization of Solution of Potassium Bicarbonate, he obtained colorless permanent monoclinic crystals of Potassium-sesqui-carbonate.

He also determined the chemical composition of Kaolin, as

$$Al_2 Si_2 O_7 + 2H_2O = Al_2O_3.2\,Si\,O_2 + 2H_2O.$$

He performed great service by the publication of a number of text books, as for instance:

"Handbuch der Mineralchemie."
"Krystallographisch-physikalische Cheme."
"Grundriss der Anorganischen Chemie."
"Grundriss der Chemie."

which books will remain the everlasting monuments of Rammelsberg, the former apothecary.

JEAN SERVAIS STAS.

(1813-1891)

Was born at Louvain, France, and as early as 1835 without having access to a properly equipped laboratory, made a thorough chemical investigation of phloridzin, which helped to his securing a place in the laboratory of the celebrated Dumas at Paris. This first research of Stas even attracted the attention of Berzelius. Dumas and Stas worked together upon the action of alkalies on alcohols, ethers and esters of the fatty series. Together they began a thorough determination of the atomic weight of carbon, a research which formed the starting point of the chemical work, with which the name of Stas is so intimately associated, and which extended over thirty years, from 1840-1870.

In 1840 he was appointed professor of chemistry at the Ecole Royale Militaire in Brussels, a position which he held for many years, until a throat affection compelled him to resign. In connection with a murder case arising in 1850, Stas originated a method for the detection of individual alkaloids. His method was modified by the pharmacist Friederich Julius Otto (1809-1870) and is still known and used today as the Stas-Otto method. In 1880 Stas furthermore determined the spectra of the alkaline earths. The long and arduous researches

of Stas brought out quite a number of important facts and in consequence took their proper places in the history of chemistry.

LUDWIG ANDREAS BUCHNER.

(1813——?)

He was born July 23, 1813 in Munich where his father, Dr. Johann Andreas Buchner held the position as chief apothecary of the charitable hospitals. He studied pharmacy in der "Mohrenapotheke" at Nuremberg. In 1834 he went to Paris, attended the lectures of Gay-Lussac and Chevreu and became assistant to the celebrated chemist Bussy. He returned to Munich where he received the degree of Doctor of Philosophy in 1839, and Doctor of Medicine in 1842. He then commenced his academic career and in 1852 became professor of pharmacy at the University of Munich.

Buchner was a very productive author. He published twenty-five volumes of the Repertorium für Pharmazie and his celebrated Commentar zur Pharmacopoea Germanica, together with the supplement. He was very active as a member of the Committee of Revision of the Bavarian Pharmacopoeia and in 1871 became a member of the Revision Committee of the new German Pharmacopoeia.

G. ADOLPHE CHATIN.

(1813——?)

He was born on November 30, 1813, at Tullins, France. In 1814 he became Doctor of Natural Science and pharmacist of the first class, and in 1844 Doctor of Medicine. In 1842 he became connected with the École superieure de Pharmacie in Paris and served as its director for thirteen years from 1873 to 1886. He is the author of a number of works among which was "Anatomie Comparée des Vegetaux" which is one of the best known. His numerous works were published in Comptes rendus de Academie des Sciences, in Bulletin de la Societe botanique de France, and in Journal de Pharmacie et de Chimie.

DR. JOHAN ELIZA DE VRIJ.

(1813-1898)

One of the most famous men, whose cradle stood in an apothecary shop in Holland, was Johan Eliza de Vrij. He was born on January 31, 1813, at Rotterdam and was apprenticed in his father's apothecary shop and continued the pharmacy after his father's sudden death on December 10, 1831. He studied chemistry, pharmacy and botany under the celebrated Dutch chemist Georg Johannes Mulder. As early as 1831, he translated the master work of chemistry of its time, namely the book of Heinrich Rose into the Dutch language. Through this translation and his other chemical work, he became thoroughly acquainted with the most noted pharmacists, chemists and botanists of his time, including such man as Gustav Magnus, Jons Jacob Berzelius, Johann Bartholmee Trommersdorff, Lorenz Geiger, Rudolf Brandes, Joseph Pelletier, Jean Bienaimé Caventou, Justus Karl Hasskarl, L. Nees von Esenbeck and Justus von Liebig and others.

In 1838, he graduated from the University at Leyden with the degree of Magister Matheseos et Doctor Philosophiæ Naturalis, and then became in 1841 successor to his former teacher Mulder at the University of Rotterdam. In 1850

he sold his pharmacy and devoted himself to an Academic career. His achievements are so numerous that it is impossible to go into details. However, it may be stated that he reached conclusions which served for the foundation of our present knowledge of bacteriology. He experimented with nitro-glycerin, red phosphorus, the assays of opium, of cinchona, and of cherry laurel water, different tests for strychnine, etc., etc.

The Dutch Government was very fortunate in increasing their cinchona plantations in Java, under the direction of the German botanist, Franz Wilhelm Junghuhn (1812-1864.) In 1857 de Vrij was sent by the government to Pahua, Dutch India as a governmental chemist. It was here that de Vrij made his many examinations of the different species of cinchona and obtained worldwide reputation as a chinologist. In 1865 he returned to Holland and conducted a private laboratory for the assay of cinchona bark. On account of his work on cinchona, Queen Victoria on July 14, 1880, bestowed upon de Vrij the "Order of the Indian Government," on account of which the title, "Companion of the Indian Empire" which is abbreviated as C. I. E. is added to his name. On June 6, 1882, de Vrij celebrated the 50th anniversary of his State Board examination.

De Vrij used his vacation time in travel, and became acquainted with other prominent men, and the following quotation from the "Chemist and Druggist" of October 15, 1881 may be of interest.

"Properly there is no foreign chemist with whose personal appearance pharmacists are more familiar than with that of Dr. de Vrij of The Hague. He has been called 'The Flying Dutchman' on account of his frequent visits to our shores. Cosmopolitan in his friendship and in his speech, he is to be met with whenever a congress or a scientific gathering forms a reasonable excuse for travel."

Johan Eliza de Vrij's name was frequently mutilated and mispronounced as "Wrii" and for this reason he was in the habit of signing himself "Vry" when corresponding with foreigners.

JOHN KING, M. D.

(1813-1893)

Dr. de Vrij was born on the last day of January. Dr. John King on the first day and both of these men have made the year of their birth famous, in pharmacy and medicine.

On New Year's morning, 1813, just as an American Man-of-War came into the harbor of New York towing a British prize, John King opened his eyes upon a world he was destined to adorn. The biography of Dr. John King has been so well written by Dr. Harvey Wickes Felter in Bulletin No. 19, Pharmacy, Series No. 5 of the Lloyd library that it would be wasteful to enter the subject very deeply. Suffice is to say that Dr. John King became famous as a physician, chemist, teacher, humanitarian, author and scientist. In 1835 be became the discoverer of podophyllin or resin of podophyllum, the first Eclectic resinoid. Full particulars regarding this discovery are given in the Bulletin above mentioned. As an author, John King's name will live forever in pharmacy in the "American Dispensatory." After eighty well-spent years, he died June 19, 1893 at North Bend, Ohio.

Contributed and Selected

THE RELATIONS OF THE PROPRIETOR TO THE RETAIL DRUGGIST AND PRICE MAINTENANCE.*

F. K. FERNALD, ELKHART, IND.

I would like to say at the beginning of this report that the views of your chairman may be somewhat influenced by his personal position in regard to some important details which later will be quite thoroughly discussed.

Our relations with the retail trade appear on the surface and from the personal standpoint to be cordial and satisfactory, and the volume of business is on the whole fairly maintained.

To those in closer touch with the retail dealer, and therefore better acquainted with his personal views and his organized efforts to make such views effective, there is, I think, easily recognizable a serious movement, not perhaps intentionally so, but nevertheless antagonistic to the interests of proprietary manufacturers.

This movement has no reference, as a rule, to the merits or demerits of the articles themselves, but has had its origin in the rather complicated conditions arising from (1) a compulsory change in the working methods of the organized trade, (2) from the extremely unsatisfactory price schedules in the large cities and the localities immediately surrounding them, and (3) to an uneasy feeling among the ultraethical members of the trade caused by the vicious attacks upon proprietaries generally made during the last five or six years by individuals who have been either misled by their prejudices and associations or who have had some commercially selfish end in view.

You will remember that the slogan of the N. A. R. D. at its organization was and is now "Live and let alive," and a very good slogan it is.

Following the decision of the Federal Court at Indianapolis, commonly known in the trade as the "Indianapolis Decree," much of the militant spirit which previously characterized the efforts of the organization for better prices disappeared of necessity, and was replaced by a much more chastened feeling, and followed by efforts to maintain the prestige and influence of the association along other lines. The immediate result was the propaganda movement, far heralded at the start, but apparently in the net result somewhat disappointing.

*Abstracted from the "Report of the Committee on Relations with the Retail Drug Trade," presented at the last annual meeting of the Proprietary Association of America. The paper is reprinted as a contribution to the subjects of price maintenance on proprietary medicines and the cooperative manufacturing and buying movement. The report is not only well written and readable, but presents a fair-minded statement of the retailer's reasons for being dissatisfied with his present profits on proprietary goods, and shows that the proprietors are awakening to the necessity of cooperating with him in devising or finding an effective legal method for giving the relief asked for.

While this movement may not have measured up to the fond anticipations of its friends, it yet had a temporary tendency to bring the druggist and physician closer together, a result which could hardly be an advantage to the manufacturing proprietor. In this movement the idea was to induce the physician to use in his practice the pharmaceuticals made by the druggist instead of those made by the well-known manufacturers of pharmaceutical specialties. A certain amount of detail work was done among physicians, many "get together" meetings were held, and the doctor was urged to use the home products of the druggists. The arguments presented doubtless had a considerable effect, but I can easily imagine that some of them fell on unsympathetic ears and that propositions on the quid pro quo order might have been made, which if accepted by the druggist must have bound him to look with less favor on the sale of advertised proprietaries.

Following also the "Indianapolis decree," the cut-rate situation in many localities grew steadily worse, not that prices were cut nearer to cost, but that more cutters and cut-rate cities developed, and the chain store idea came more and more to the front.

As a corollary to the chain store in private hands various enterprises, large and small, of a co-operative nature, with druggists as stockholders, were organized and most of them appear to have met a fair measure of success.

Chief among the chain store enterprises are the Riker corporation, the Owl Drug Company and the United Drug Company, the latter sharing profits with retail druggists who are its stockholders.

The Riker concern, known as the Riker-Hegeman Corporation in New York and New Jersey, has also located in Philadelphia and Washington, D. C., besides acquiring stores in Schenectady and Rochester, N. Y., while as the Riker-Jaynes Company it is firmly seated in Boston and most of the other cities of Massachusetts, Rhode Island and Connecticut, and is about to begin operations in Portland, Me., with prospects of farther extensions in the States of the Middle West. The Owl Drug Company covers the Pacific coast states.

The United Drug Company is now operating a number of stores in the New England cities and in Buffalo, N. Y., and is marketing the "Rexall" line throughout the country with the assistance of those dealers who are among its stockholders.

The Owl Drug Company has long been the dominant concern in California, Washington and Oregon and has been a persistent price cutter, thoroughly demoralizing the trade in localities in which it operates.

The United Drug Stores of Baltimore is also a newcomer in the field.

It would seem that the Riker stores of New England were able alone to sufficiently demoralize the trade, but in the cities where United Stores are also located and in which the competition on advertised proprietaries is something frightful, the lot of the average druggist, ground as he is between the upper and nether millstone, must be very unhappy.

One of the most deplorable features of the situation is that the conditions described are unlikely to be long confined to present areas.

The smaller co-operative ventures of dealers in the various cities, the "buying clubs" and many small jobbing houses owned by the retail dealers which are

thorns in the flesh of the regular wholesale druggists, add their complications to the general situation, not only for the jobber, but for the manufacturer.

These co-operative ventures at first originated in localities (usually large cities) in which the retailer, unable to protect himself adequately against the ruinous prices made by the professional cut-rate dealers—that is, being unable to control his own selling price—looked with much favor upon plans which gave promise of a saving at the buying end.

This movement, however, has grown in some instances to larger proportions, and has been handled in a manner to excite the envy of promoters who have long traveled the path of high finance in other lines.

It has also involved the manufacture and sale of many articles of a proprietary nature, often on a small scale, but sometimes on a large one, and as to which every individual sale over a retail counter has been based on a demand created by your advertising and in each such instance your legitimate business and profit have been diverted to other channels.

The conditions outlined above have been of gradual growth, and for that reason their influence has not been readily noted, but taken as a whole it would seem that they must work to our disadvantage, not only in the movement of our products through the hands of retail distributors, but also in a divergency of interest, which is sometimes manifested in a lukewarm support in matters which are important to us, or by a seeming disregard of our welfare in matters which seem important to them.

The conditions to which I have called your attention are in my judgment very important to every proprietor, and are due primarily to the inability of the retail druggists to obtain the fair profit on advertised proprietaries which we say he should have and to which he is certainly entitled.

It is true that with the ultra-ethical portion of the trade arguments unfriendly to proprietary interests would have had their influence regardless of price conditions, and articles marketed on fake lines or palpably sold for improper purposes would have been the subjects of discrimination by the self-respecting druggist doing his plain duty to the public, but it is a commercial axiom that the interest of a merchant cannot easily be diverted from a legitimate and reputable article whose sale shows a reasonable profit. However, when that profit disappears why should he be interested? Why is not a certain antagonism perfectly natural and why is the idea of substitution not the inevitable result?

I do not undertake to fix the blame for this trade difficulty, but the fact remains that it is a glaring absurdity to expect a retail merchant—and the druggist is a retail merchant to the extent of half his business or more—to continue to sell articles of any nature on which he makes but an inadequate profit or none at all.

Don't blame the druggist generally for this condition. He is in business to make a living, and as he cannot do so by selling your article without a profit he will sell something in its place whenever possible upon which his profit is adequate. And remember, too, that it is the business of the various syndicates, co-operative concerns, and the older manufacturers of non-secret goods to furnish the trade the proper articles with which to effect the substitution. Re-

member, too, that these concerns flourish in proportion to the spread of professional price cutting, and that the loss in your business is measured by their success. Bear in mind, also, that the habit of substitution is not natural but acquired.

It does not matter where the blame lies. It does not matter that the trouble originates in the ranks of the retail trade. The important thing is to find a means of cutting out the professional price cutter. The retailer says that the manufacturer should do it, but he does not point out the way. The manufacturer perhaps has a right to say that he is not responsible, but that attitude cannot rehabilitate his business, nor assist his retail distributer, and is probably tempered by the theory that he gets his price and his profit, no matter what happens to the goods after they leave his hands, which theory is, in my judgment, very short sighted.

The obvious method of accomplishing this result is unfortunately closed by the various anti-trust laws of the states and nation, and we have this very peculiar situation—that a small retail merchant cannot protect himself against piratical price cutting on articles which comprise in volume about one-half of his business, though the laws were designed to prevent monopolies and discourage unfair competition, and the decent manufacturer takes his business life in his hands and jeopardizes his personal liberty if he tries to assist him.

I am not attempting to point out the solution of the problem, but believe that the anti-trust laws should be so amended as to protect the average merchant against the unfair encroachment of his large and purse-proud competitor. The small merchant has certainly some rights which even the legislators and the public should respect.

Articles in a recent number of Everybody's Magazine on the "High Cost of Price Cutting," by Prof. Galloway, of New York University, and by Henry B. Joy, of the Packard Motor Car Co., show that similar troubles afflict other lines. The Ingersol Watch Company, among others, is also having trouble to maintain the price on its dollar watches.

Some legislator in New Jersey has evidently seen light on this subject, for after the passage in the Legislature of that State of a number of very stringent anti-trust bills, he introduced a bill which is now a law forbidding the stealing of the trade-marks, good will, etc., of another, in which good will the advertised retail price is included and compelling the observance of that price if notice of a fixed selling price accompanied the package. If this law can be sustained in the courts it will do much for the merchants of New Jersey.

My observation is that our relations with our ultimate distributors are from a personal standpoint satisfactory, and on the commercial side only fair, with a tendency to grow worse. If we all made it a point to keep in close touch with the retailer, co-operating wherever possible with his legitimate efforts to better his condition, if we attended his trade association meetings, if we took pains to consult with him individually and collectively as to matters of mutual interest, we should be better able to share his viewpoint and better able to help him and ourselves when emergencies arise.

I cannot believe that any argument along this line is necessary, as the advantages from a close association with our distributors is so self-evident. Nor do I

think I should take the time to go into this phase of the subject in detail. Gentlemen of your business experience are well able to devise means for accomplishing the desired result without elementary instructions. You have all taken post-graduate courses. My aim is to bring to your attention the vital necessity of close and pleasant relations with those who hand our goods over the counter to the public for whose business we advertise, and to insure so far as is possible that this transaction is accompanied by a standard and adequate profit.

I want to urge upon you as strongly as possible the great importance of making a personal and business friend of the retail druggist. Go to him with legitimate preparations advertised on clean lines, convince him that you have his interest in mind as well as your own, and your enemies will find it difficult to induce him to join in unfair attacks on your business.

BUYING CHEMICALS FROM PEDDLERS.

OTTO RAUBENHEIMER, PH. G., BROOKLYN, N. Y.

The writer well remembers that some years ago, when refined deodorized wood alcohol was first placed on the market under a fanciful name, silver tongued salesmen were trying to convince the pharmacists throughout the country that this product was non-poisonous, and was in every way equivalent to grain or ethyl alcohol, and could be used in its place. As the result of this, many druggists throughout the United States were induced to use this product on account of its cheapness, and as a consequence some druggists had to pay fines, or even go to jail.

Practically the same conditions have existed, and do still exist ever since the new chemicals, the so-called coal tar derivatives, have been introduced into the United States. The large chemical industries especially those of Germany, have spent thousands, nay millions of dollars to perfect and to introduce these products, and for that reason, are charging a fair, and in some cases, a somewhat fancy price for these new chemicals. The processes of manufacture are patented, and the names of the chemicals are trade-marked. This serves as a protection for the manufacturer. The little republic of Switzerland has a patent law, which refuses protection to chemicals and chemical processes, and the result is that most of these chemicals are duplicated or imitated in that country, and are distributed from there. The United States in particular seems to be one of the large outlets for these products. Sometime ago, the writer read the following letter from a firm in Philadelphia:

"Kindly note that we have reduced prices on Givaudan's chemicals. Perhaps, at times, you have calls from druggists who want chemicals at ruinous low prices, regardless of whether the goods are A1 or not. If so, we have some of Siegfried's chemicals on hand, which we will sell below cost. You, of course, buy these at your own risk. Any reasonable offer will not be refused if you can use same."

Just think of such a condition in medicine, intended for the cure and relief of the sick! These imitation goods are distributed by peddlers, who deliver their

fraudulent wares to druggists from hand satchels. These peddlers are irresponsible men, who very frequently make only one visit, who have no address, who leave no bills, and who cannot be held, nor can they be caught. These peddlers are in the same class as "gunmen," many of them being ex-convicts, who would resort to any means in order to obtain money. These peddlers are also the distributors of obscene rubber goods and instruments, the sale of which is forbidden by law. They also supply cocaine and morphine to habitues, and even to school children. These peddlers buy and sell stolen goods and act as fences.

It is a large, a very large traffic that these illegitimate chemicals constitute. They are bought and sold without any guarantee whatsoever. The average druggists buy these chemicals at a slightly lower cost than the genuine articles. They dispense them, and thereby violate the patent as well as the trade mark rights of the manufacturer. That the manufacturer has such a right has been demonstrated on numerous occasions, when druggists have been caught substituting these chemicals in place of the genuine ones, and thereby have had a great deal of legal annoyance, and even have had to pay fines or were sentenced to jail.

But the druggists are not the only guilty parties, as the peddler furthermore is in the habit of supplying the dispensing physician with these articles. The dispensing physician has no means of convincing himself of the chemical identity of these products, much less than the druggist, and thereby runs a greater risk as to the health and welfare of his patients. All he knows is that the goods bear a certain label; that the goods are cheap, and this is the sole reason that prompts him to buy them.

The infringers sell these imitations under their chemicals names, and the peddler claims that they are identical with the patented and trade-marked product, but frequently, almost invariably, these chemicals are grossly adulterated. Aristol has been adulterated with brick dust, Protargol substitutes contained only 3 to 4 percent of silver, instead of 8.3 percent, and were strongly alkaline; Salicylic acid has been sold as Aspirin, and a mixture of magnesium and sodium sulphates as Pyramidon. Adulteration has even gone so far as to imitate the labels of the genuine product, so as to require an expert to tell the difference in the outside appearance between the imitation and the genuine. It is also well known that chemicals supplied by the irresponsible peddler, are generally short weight. It has been repeatedly shown that tablets which are sold by peddlers are fraudulent. Aspirin and Veronal tablets said to contain five grains, have been found to consist entirely of inert matter. A large quantity of tablets are sold by peddlers which are made from adulterated chemicals, and it is predicted that some time or other, there will be a large exposé, which will be a serious blow to pharmacy and medicine.

It has even come to my knowledge that vials, bearing imitation labels of Salvarsan, instead of containing this wonderful remedy were filled with oxide of iron to give it the characteristic color of the genuine article, and this fraud was not discovered until the peddler selling this counterfeit article had left town to continue his criminal activities in another community.

The dangerous practice indulged in by so many druggists, as well as dispensing physicians all over the United States, of purchasing supplies from peddlers,

is one of the most serious menaces to the health and life of every community. How dangerous this practice is his been well demonstrated in a recent case, when a substitute for a chemical which was intended as an eye lotion resulted in the loss of the patient's eye, and in the recovery of heavy damages from the substituting druggist.

Just now I received a circular from A. C. Smith, Windsor, Ontario, Canada, one of the veteran dealers in this class of goods which circular in fact prompted me to write this article. I would ask you to read carefully the following sentence taken from it:

"You are taking an *awful chance* by buying elsewhere; it is a *crime to buy rank imitations and short weight tablets* peddled by every Tom, Dick and Harry, whose sole desire is to get all the profit possible irrespective of quality. *You owe it to yourself and customers to buy these chemicals only from a reliable source.* I positively *cannot* recommend anyone to you. I am retiring from business with a clean slate—honorably. No man will ever find me ungrateful or dishonorable."

Could there be better proof than these statements, made by a man who knows the truth of the nefarious dealings of these peddlers? How humiliating for us druggists that we must allow ourselves to be advised by that man not to take any chances in buying goods from his competitors!

Retail druggists as well as physicians should take pride in their honorable calling, and in their profession, and should not buy their supplies from irresponsible parties. This, in my opinion, is the curse of the retail trade of today, and the sooner this will be abolished, the better it will be for professional pharmacy.

We pride ourselves on our high state of civilization, but I doubt whether conditions in this particular are anywhere as bad as in the United States; not in the darkest part of Mexico would it be possible for peddlers to sell medicines and no druggist could be found who would stoop as low as to buy supplies from notorious criminals.

It has been rumored that Mayor-elect Mitchell will appoint Dr. H. W. Wiley, Commissioner of Health of the City of New York. Let us hope that this will be done and that Dr. Wiley will begin his activities by putting an end to these criminal practices in New York City which would have a beneficial effect all over the United States.

A STUDY OF SPIRIT OF CAMPHOR TO SHOW THE EFFECT OF ADDED WATER.

J. W. MARDEN AND VANNA ELLIOTT.

The camphor in spirit of camphor can readily be determined either by titration or, if the camphor be from the same source, by means of the polariscope, but the percentage of alcohol cannot be determined by the ordinary distillation method because of the volatility of the camphor. Upon the information that certain druggists were adding water to their spirit of camphor in order to save alcohol, a study was made with the aim of devising a method for the determina-

tion of the percentage of alcohol used in making the preparation and, since the polariscope method for the determination of camphor can be used in this laboratory, a study was also made of the effect of dilution of the alcoholic solutions of camphor on their polarimetric readings.

The method devised for the determination of the alcohol was similar to that suggested by Marden[1] for the determination of alcohol in tinctures of iodine. Known weights of pure camphor, conforming to U. S. P. requirements, were dissolved in ninety-five percent alcohol and the change in weight of a given volume of the mixture was determined per gram of camphor. For this work a weight pipette[2] was used which held 4.6990 grams of water at 20° C. It was found that one gram of camphor dissolved in 100 cc. changed the weight of this volume of liquid .00340 grains. The use of this factor is best shown by an example:

Grams of camphor per 100 cc. = 10.00
Wt. (of pipette full) of the liquid.....=4.0420
.00340 multiplied by 10.00.....= .0340
Corrected weight .....=4.0080

$$\frac{4.0080}{4.6990} = 0.8529 = \text{Sp. Gr. of Alcohol} = 83.98 \text{ per cent.}$$

83.81 percent alcohol was used in making this preparation.

The following table shows some of the results obtained in this way and calculated as above.

TABLE I.

Gms. Camphor per 100 cc.	Wt. of Spirit	% Alc. used in preparation	% Alc. by calculation	Difference
2.00	3.8072	97.05	96.85	—.20
4.00	3.8140	97.05	96.85	—.20
4.00	4.0180	84.34	84.24	—.10
5.00	4.1562	73.54	73.61	+.07
6.00	4.2602	64.97	64.93	—.04
6.00	3.8310	97.05	96.34	—.71
7.00	4.2204	68.36	68.68	+.32
8.00	4.1235	77.36	76.96	—.40
9.00	4.1312	76.20	76.72	+.52
10.00	4.0420	83.81	83.98	+.17
12.00	3.9700	89.41	89.36	—.05

It is to be seen readily from this table that the percentage of alcohol can be determined by this method with a very fair degree of accuracy. It must be admitted that this factor gives somewhat better results with the lower percentages of alcohol and lower concentrations of camphor. It is, however, only in a spirit that is low in camphor that dilution with water is to be expected. Under good conditions the above method should give within 0.5 percent of the true percentage of alcohol used in making the preparation.

It was found that polarimetric readings of solutions of a given number of grams of camphor dissolved in 95 percent alcohol were not the same as when the same weights of camphor were dissolved in more dilute alcohol. Solutions of varying strengths of both camphor and alcohol were therefore polarized and

[1]This Journal, November, 1913.
[2]Mulliken, Identification of Pure Organic Compounds. Vol. I, page 229.

the results compared with those obtained with 95 percent alcohol. The following table shows these differences.

TABLE II.

No.	Gms. Cam. found with 95% Alc.	Gms. Cam. in Dil. Alc.		Dif. in Gms. of Cam.	Gms. Cam. low % of Alc.
		% Alc.	Gms. Cam.		
1	4.00	84.34	3.40	.60	.055
2	5.00	73.54	4.66	.34	.016
3	6.00	64.97	4.95	1.06	.035
4	7.00	68.36	6.30	.70	.026
5	8.00	76.96	7.50	.50	.028
6	9.00	76.20	8.40	.60	.032
7	10.00	83.81	9.40	.60	.054
8	12.00	89.42	11.80	.20	.036
					Average, .035

The last column represents the value given in column (5) divided by the number of units of percentage that the alcohol given in column (3) is below 95 percent. Although these polarizations were done with a polariscope which does not allow great accuracy, yet it is apparent that there is a very nearly constant decrease of the grams of camphor per 100 cc. found by this method with the decrease in the percentage of alcohol. This decrease in grams of camphor is fairly large and the average value of column (6), .035, equals the number of grams low which spirit of camphor read in the polariscope for each unit percent that the alcohol used in its preparation is below 95 percent. In the case of No. 3, only 4.95 grams were observed. Since the difference of one gram of camphor would change the percentage of alcohol by calculation but a few tenths of a percent, the grams of camphor found by the polariscope could be corrected by multiplying the difference between 9 percent and the percent of alcohol found by .035 and adding this value to the grams of camphor already found by means of the polariscope. For example, a sample was found to contain 4.95 grams of camphor and that 65 percent alcohol was used in its preparation.

$95 - 65 = 30$, and $30 \times .035 = 1.05$,

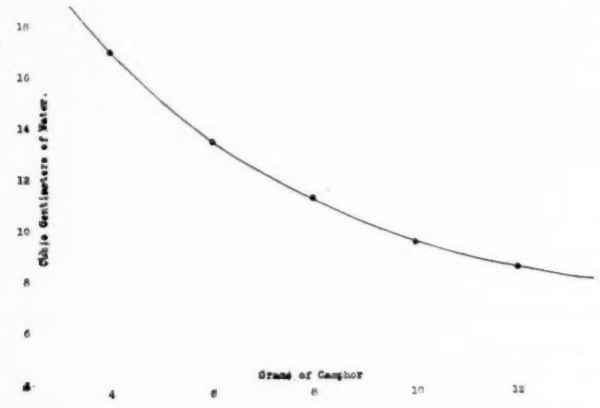
$1.05 + 4.95 = 6.00$ grams. The sample contained 6.00 grams of camphor per 100 cc. (No. 3, Table II).

Another method was devised to serve as a check upon the specific gravity method for the determination of added water. It was found that 10 cc. of the spirit of camphor of a definite concentration always took the same volume of water to produce a permanent precipitate and that spirit that contained added water took correspondingly less water to produce a permanent precipitation. The following table (a) gives the cc. of water necessary to give a permanent precipitate in 95 percent alcohol and table (b) the volumes of water necessary to cause a permanent precipitate in more dilute alcoholic solutions.

TABLE III.

(a)			(b)			
Gms. Cam. per 100 cc.	Cc. of Spirit.	Cc. H_2O	Gms. Cam. per 100 cc.	Cc. of Spirit.	% Alc.	Cc. H_2O.
4.00	10.0	17.0	4.00	10.0	84	12.4
6.00	10.0	13.5	6.00	10.0	65	3.6
8.00	10.0	11.3	8.00	10.0	77	5.8
10.00	10.0	9.5	10.00	10.0	84	6.3
12.00	10.0	8.5	12.00	10.0	89	7.8

The values given in Table III (a) are plotted on the accompanying diagram and from the curve the volume of water can be read that any concentration of camphor dissolved in 95 percent alcohol should take to form a permanent precipitate.



A table is given below to show the results of these experiments on a number of samples of spirit of camphor which were found low in camphor and were tested for added water.

TABLE IV.

No.	Gms. Cam. found per 100 cc.	% Alc. by calc.	Cc. H_2O to titrate 100 cc. Sp. Cam.	Dif. from standard value.
1.....	6.10	93.2	12.0	—1.0
2.....	8.47	94.9	10.5	—0.3
3.....	5.5 (6.5) corr.	67.7	4.2	—10.0
4.....	8.24	94.3	10.7	—0.3
5.....	8.37	94.3	10.7	+0.1
6.....	8.78	94.5	10.4	—0.2
7.....	9.22	94.1	9.7	—0.5
8.....	9.04	94.9	10.4	0.0
9.....	8.8 (9.2) corr.	83.2	7.7	—2.9
10.....	7.06	94.1	11.7	—0.5
11.....	9.00	94.1	10.2	—0.2

It will be noticed that in all cases except three the percentage of alcohol does not exceed 94.9 percent (the U. S. P. strength) or is it less than 94.1 percent, making a total variation of only 0.8 percent. In the three cases where the percentage of alcohol is low the volume of water necessary to produce a permanent precipitate is abnormally low indicating that some water is already present. Excepting these three cases the volume of water is in no instance more than 0.5 cc. away from the standard value. Numbers 3 and 9 have been considerably diluted. Number 1 may have been put into a wet bottle in its preparation, but the percentage of alcohol is not low enough to consider the sample adulterated.

The factor for the determination of alcohol can be restated so as to be used in any specific gravity apparatus. The grams of water necessary to fill the pycnometer used for the determination at 20° C. multiplied by .000723 will give the factor for that apparatus.

CONTRIBUTED FROM THE SOUTH DAKOTA STATE FOOD AND DRUG LABORATORY, VERMILION, S. D., Dec. 8th, 1913.

WRIGTH'S STAIN—MODIFIED.

R. A. KUEVER, IOWA CITY, IA.

This polychromic stain, originally known as Romanowsky's stain, has had many modifications. In principle, they all depend upon the loose chemical combination of eosin (tetrabromofluorescin) with methylene-blue, these dyes staining not only as units but acting together when properly combined. The two in solution in the same solvent, therefore, contain at least three compounds, each of which colors the various structures of the specimen, selectively.

This particular modification yields an eosinated methylene-blue solution which will not only produce a strong differential stain but simplifies the technic of both the preparation of the stain and the staining of specimens, and it gives more uniform results.

Solution No. 1.

Methylene-blue (Merck)	5.0
Sodium bicarbonate	2.5
Distilled water	500.0

Place the methylene-blue and the sodium bicarbonate in a 1000 cc. flask, add the distilled water and connect the flask with a twelve inch reflux Liebig condenser. Transfer this apparatus to a water-bath and heat for two hours, and then cool.

Solution No. 2.

Tetrabromofluorescin (Merck)	4.0
Water, distilled	250.0

Dissolve the tetrabromofluorescin in the distilled water by agitation or stirring.

After solution number one has cooled to 20° C., add solution number two slowly and with frequent agitation. Collect the precipitate thus formed on well-wetted filter. While it is still wet dissolve it in 60 cc. of hot methyl alcohol (acetone free), and again filter. Evaporate this solution to one-half its volume and set aside for the eosinated methylene-blue to crystallize. Collect the crystals thus formed and after they have been dried spontaneously, transfer them to a well-stoppered, amber-colered bottle.

THE STAIN.

Eosinated methylene-blue	.1
Methyl alcohol	100.0

Dissolve by agitation.

The methyl alcohol should be acetone free and the eosinated methylene-blue should be made by the above process.

This stain, like all polychromic stains, decomposes rather rapidly and should therefore be made in small quantities. Amber bottles will retard the decomposition somewhat.

METHOD OF STAINING.

Pour the stain over the surface of the specimen until it covers it and allow to remain for from fifteen seconds to one minute; this period of time varying with the thickness of the specimen. This serves to fix the film to the glass as well as to stain it, so it is not necessary or desirable to pass the preparation through the flame. Now add distilled water, drop by drop, until a slight metallic

scum is produced on the surface of the stain. At this point a precipitation occurs and the real staining takes place which takes from five to ten minutes. Next wash in distilled water for several minutes or until the thin parts of the specimen have acquired a yellowish tint. The differentiation may freqeuntly be brought out more plainly by washing longer.

If the blood-smear, as an example, stains a uniform deep-blue, distilled water will bring about a differentiation, removing the blue from the acidophilic parts, leaving them well stained with an eosin color.

The differentiation produced by this stain is as perfect as can be obtained by any of the eosinated methylene-blue combinations, and is being used with a great deal of success on blood-smears, demonstration of bacteria in cellular exudates, pus, etc.

DETERIORATION OF NITROGLYCERIN TABLETS.

J. R. RIPPETOE AND N. SMITH.

Although within the past five or six years several prominent pharmaceutical chemists have expressed the opinion that nitroglycerin tablets are a stable preparation, there are still some who believe in their instability and that the deterioration is chiefly due to volatilization.

In 1907, Bernegau[1] stated, that "the loss of nitroglycerin appears to be in the granulation process, and that the tablets themselves are fairly constant" and Dohme[2] in the same year stated "that observations made in his laboratory appear to indicate that tablets of nitroglycerin do not deteriorate perceptibly in course of time." In 1908, Gane and Webster[3] referred to "nitroglycerin as a stable compound" and Edmunds and Roth[4] find that "contrary to the common opinion, nitroglycerin tablets do not deteriorate greatly with age." Again 1909, Dohme[5] comments upon a "comprehensive investigation of the deterioration of the tablets, that disprove the claim that these tablets deteriorate rapidly" and very recently Vanderkleed[6] stated that "nitroglycerin tablets when properly made are to be classified among the more stable products, * * * and the tablets will remain unchanged or practically so, for a considerable length of time."

The last comment was in reply to an editorial article referring to the very unstable nature of nitroylcerin tablets due to loss by evaporation.

Until the phenoldisulphonic acid method was proposed by Scoville[8] and its modification by the Bureau of Chemistry,[9] and also the May method,[9] there was no very reliable method for accurately determining nitroglycerin in tablets. We have found the modified Scoville method to be a very practical and reliable method.

The purpose of this paper is to report the results of several experiments and while not covering a very long period or many samples, we believe the figures are quite sufficient to demonstrate the stable nature of nitroglycerin tablets.

Samples of 0.01 (1/100) and 0.02 (1/50) grain hypodermic tablets, which were assayed on April 12, 1912, having been made sometime previous, were set aside on a laboratory shelf in ordinary cork stoppered glass tubes of

about 100 each. These tablets were again assayed by the modified Scoville method on Nov. 12, 1913, with the results as shown in the following table.

	April 12, 1912	Nov. 12, 1913
0.02 grain	0.0150 gr.	0.0149 gr.
0.01 grain	0.0061 gr.	0.0057 gr.

These tablets while they were deficient in nitroglycerin when made show practically no loss during a period of 19 months.

A 10 percent solution of nitroglycerin (strength was not confirmed by analysis) was mixed with sugar of milk to give a nitroglycerin content of 5 percent. This mixture upon analysis was found to contain 4.13 percent of nitroglycerin. A quantity of hypodermic tablets was made up from this mixture using the theoretical amount based upon the above analysis to give a tablet assaying 0.01 grain. The tablets upon assaying were found to contain 0.0102 grain nitroglycerin. These tablets were hand made while a lot of tablet triturates, which were made from a granulation on a machine using the same quantities as above assayed 0.0093 grain nitroglycerin.

The hypodermic tablets were also assayed by extracting with ether, allowing the ether to evaporate spontaneously and drying in a vacuum desiccator, over sulphuric acid, and found to contain 0.0114 grain residue (nitroglycerin?) which residue when assayed by the modified Scoville method yielded 0.0095 grain per tablet.

A lot of 0.02 grain tablet triturates made in 1907 were assayed in October, 1907, by the ether extraction method and appeared to be of full strength, but as shown above, this method gives too high results, and the saponification method proposed some years ago gives still higher results.

Two bottles each containing about 100 of these 0.02 grain tablets, were set aside in a closet, one of the bottles being corked and the other having only a piece of muslin over the mouth of the bottle to exclude dust. These tablets were assayed in November, 1913, by the modified Scoville method after having been stored as stated above for six years with the following results.

Tablets in stoppered bottle	0.0130 grain
Tablets in unstoppered bottle	0.0040 grain

In all probability these tablets would not have assayed, by the modified Scoville method, much over 0.015 grain when made. (Compare assay tablets in first experiment April 12, 1912.)

Conclusions: It is apparent that nitroglycerin will volatilize in the process of making the tablets if the granulation is exposed for any length of time, but after compressing the tablets and storing in ordinary corked bottles very little deterioration takes place.

The tablets will lose in strength if exposed in unstoppered bottles, therefore containers that are not air tight such as card board boxes should not be used.

[1]Bernegau, Am. J. Pharm., 1907, 79, 555.
[2]Dohme, D. A., Apoth. Ztz., N. Y., 1907, 28, 133.
[3]Gane & Webster, Drug Topics, 1908, 23, 197.
[4]Edmunds and Roth, J. Am. M. Ass., 1908, 51, 2131.
[5]Dohme, Proc. M. Ph. A., 1909, 104.
All the foregoing references through Digest of Comments on the U. S. P. Hyg. Lab., Wash.
[6]Vanderkleed, Am. Drug., July, 1913, 240.
[7]Am. Drug., May, 1913, 148.
[8]Scoville, Am. J. Ph., 1911, 83, 359.
[9]Murray, Proc. A. O. A. C., 1911, 248.

ANALYTICAL DEPARTMENT, SCHIEFFELIN & Co., New York.

THE POSSIBILITY OF INCREASING THE ALKALOIDAL CONTENT OF BELLADONNA PLANTS THROUGH SELECTION.*

A. F. SIEVERS, BUREAU OF PLANT INDUSTRY, U. S. DEPARTMENT OF AGRICULTURE.

For a good many years importers and jobbers of drugs have experienced difficulty in supplying certain drugs of the required strength. Even previous to 1900, the belladonna and stramonium which could be secured was alleged to be of such inferior quality that it was impossible to furnish sufficient quantities of these drugs of the Pharmacopœia Standard. This difficulty was finally recognized by the revision committee of the eighth decennial revision of the Pharmacopœia, and the required strength of each of these drugs reduced by .05 percent of alkaloids.

Whatever may have been the wisdom of making this reduction in the standards, the fact that it was made first called serious attention to the apparently growing inferiority of some of the important official vegetable drugs, a situation which was viewed with considerable alarm, for if any further deterioration should take place in the future, as seemed very likely, it would become necessary in time to still further reduce the standards with the consequence of bringing a lot of inferior material on the market. The rapidly diminishing supply of belladonna from the wild state makes its cultivation in the near future practically a necessity and since cultivation of a naturally wild plant often results in decreasing its strength, it seemed highly desirable that something be done to improve the quality of this plant.

While the Solanaceous group of plants are not by any means the only ones which could be improved to advantage, the Office of Drug Plant Investigations in taking up this problem selected this group on which to begin the study of medicinal plant improvement for several reasons. In belladonna and hyoscyamus the group includes two of probably the most important and most widely used vegetable drugs. Two of the members of this group were largely responsible for the attempt to investigate this question in that the widespread inferiority of the official material they furnished necessitated the lowering of the Pharmacopœia standard, thus calling attention to a question of grave importance. The active principles which they contain being definite chemical compounds which admit of definite quantitative determinations the plants lend themselves well toward studying individuals. Finally, belladonna, being a perennial, can be studied through a number of successive seasons which is a further distinct advantage.

The investigation was started on its present scale in the spring of 1911. The first step was entirely in the direction of studying a large number of individuals to determine the following principal points: (1) Is there a deterioration in the belladonna plant under cultivation, in so far as its medicinal quality is concerned? (2) If such is the case is the deterioration general of the whole plant or is it found only among certain individuals? (3) Does this individual characteristic

*Read before the City of Washington Branch, October 15, 1913.

manifest itself at different stages during the growing season? (4) Is there any relationship between the medicinal value of the plant and its physical appearance or in other words, its vigor, growth, and general thriftiness? (5) Is a high alkaloidal content in an individual plant of perennial occurrence or does it only occur in one season?

The season of 1911 was started with 59 individual plants under observation. Each plant was carefully watched as to growth and appearance with a view towards finding some striking physical characteristic which might later serve as a type. Samples of the leaves were collected at the following stages of growth: First stage, during the early part of May before the flowers appeared; second stage, during the latter part of May when the plants were in full bloom; third stage, about the middle of June when the berries were developing in various stages of maturity; fourth stage, early in September when the berries were mostly ripe; fifth stage, about the middle of October after the plants had made considerable growth of new leaves. Practically the same plan was followed in 1912 with the same list of plants.

The results of the two years' investigation show two interesting facts. Taken as a whole, the plants under cultivation at Arlington for these experiments show a comparatively high alkaloidal content in their leaves. Of the 59 plants in the list, not a single one fell below the present standard of .3 percent in its season average for either year and only one assayed below the old standard of .35 percent. This would seem to show that in this particular location at least, belladonna plants can be grown under cultivation which may be expected to yield a product considerably above the standard required at present.

The other striking fact brought out is the wide range of variation in the alkaloidal content of the individuals. Table I shows the maximum and minimum percentage found at each stage of growth among the 59 plants at Arlington, 10 plants at Madison, Wisconsin, and 19 plants at Bell, Maryland.

TABLE I.

Range of Variation in Percentage of Alkaloids in Leaves.

Stage of Growth	Arlington, Va.				Madison, Wis.				Bell, Md.	
	1911		1912		1911		1912		1911	
	High	Low	High	Low	High	Low	High	Low	High	Low
First	0.852	0.303	0.869	0.404	0.580	0.418	0.500	0.268	0.823	0.329
Second	.879	.267	.747	.292	.820	.427	.519	.316	.783	.288
Third	.925	.277	.882	.328	.767	.419	.....	.....	.750	.350
Fourth	.908	.311	.806	.359	.....	.....	.....	.....	.....	.....
Fifth	.733	.200	.678	.296	.....	.....	.....	.....	.....	.....
Season's average	.766	.306	.768	.353	.665	.430	.452	.312	.707	.346
Average	.841	.277	.792	.339	.708	.423	.490	.298	.766	.339

Alkaloidal Content at Different Periods of Growth.—There being not sufficient time to show on the tables the alkaloidal content of all the plants at all the stages of growth, a few of the typically rich and poor plants have been selected and the complete data shown in Table II.

TABLE II.

Plants with Leaves of Low Alkaloidal Content.

Stage of Growth.	No. 3		No. 23		No. 34		No. 46	
	1911	1912	1911	1912	1911	1912	1911	1912
First	.384	....	....	.496	.335	....	.337	.418
Second	.375	.393	.348	.366	....	.292	.285	.334
Third	.277	.448	.354	.341	.526	.320	.308	.480
Fourth	.549	.448	.487	....	.532	....	.588	.483
Fifth	.451	....	.425	....	.200	....	.431	.314
Average	.407	.429	.403	.401	.414	.406	.390	.406

Plants with Leaves of High Alkaloidal Content.

Stage of Growth	No. 21		No. 29		No. 1W		No. 6W		No. 7W	
	1911	1912	1911	1912	1911	1912	1911	1912	1911	1912
First	....	.732	....	.737	.638	.737	.596	.847	.558	.782
Second	.535	.719	.655	.647	.835	.642	.879	.747	.831	.666
Third	.633	.781	.914	.729	.587	.777	.925	.882	.832	.646
Fourth	.669	....	.908	....	.738	....	.711	.804	.727	.694
Fifth	.684	....	.547	....	.612	....	.722	.558	.571	.573
Average	.630	.744	.756	.704	.682	.719	.766	.768	.704	.672

Alkaloidal Content During Successive Seasons.—It having been fairly well established that the characteristic of a high or low alkaloidal content in certain individuals manifests itself during the entire growing season we come to the question of the perennial consistency of such a characteristic. This is of prime importance for the possibility of improvement by selection depends on it. If it is found that a plant selected for its high content of alkaloids one year is only of ordinary quality the following season, it would seem likely that seasonal influences are mostly responsible for the relative development of alkaloids and that such a property could not be used to advantage as a basis for selection. If, on the other hand, it is found that the high alkaloidal characteristic exists in the same plant through a number of seasons it is logical to assume that the property of forming large quantities of those alkaloids is an inherent characteristic in that particular individual plant in distinction from the others grown under similar conditions.

In Table II in which the analyses of typical plants are shown for two seasons, we find that these plants display the same characteristic throughout both seasons. Numerous other plants can be selected from the list under observation. It would seem that in plants which are conspicuously rich or poor in alkaloids, as numbers 6w and 7w and numbers 3 and 34, the tendency to produce such large or small quantities of alkaloids constitutes a definite characteristic which is manifested by that individual plant throughout its existence in much the same way as certain types of sugar beets produce a conspicuously high or low precent of sugar.

Relation of Physical and Chemical Characteristics.—As previously stated, the plants under investigation were carefully noted as to their physical appearance with a view to finding some relationship between that and the alkaloidal content. Thus far, nothing has been found to indicate that such a relationship exists.

The belladonna plant is almost entirely lacking in any distinctive physical features, any one of which might serve as a distinct type. While the size of each plant, the number of stems it has and its general thriftiness have been noted, nothing has been found which is characteristic of any one individual. It would be a distinct advantage if plants of a desirable alkaloidal content could be identified by means of some distinctive physical feature since that would make the tedious assay process unnecessary in many cases.

Method and Results of Selection.—It having been established that the variation in the alkaloidal content of belladonna plants can possibly be made the basis for the improvement of the plant, the next step in the problem is to apply the methods of selection. The belladonna plant may be propagated by seed or by cuttings. The flowers of the plant are well adapted to insect fertilization and in order to insure close pollination, bagging or screening is necessary. In selecting the plants to be used, types of very good, very poor, and average alkaloid producing individuals were chosen. While the plants of poor alkaloidal content are of no economic significance they were included so as to give more extensive data on the possibility of reproducing in successive generations the characteristics regarding alkaloid production.

In 1911, the attempt to secure close-pollinated seed was not successful. Open pollinated seed from the selected individuals were sown in the greenhouse in January and in April the seedlings were set out in the plat. The plants made a slow but steady growth and on the 23d of July, when the plants were in full bloom, the first picking was made. The number of plants secured from each selected parent varied from six to fifteen. No individual picking was made, but a general representative sample of leaves was secured from all the plants from each selected individual. On August 30th, when the berries were partially ripe, a second picking was secured in the same way. Of the five plants of high alkaloidal content shown in Table II, numbers 21 and 29 died of a root disease before seeds could be secured and number 1w was in such a diseased condition that the seeds which were secured failed to germinate. Numbers 6w and 7w and also numbers 12 and 13, each rich in alkaloids, yielded first generation plants from their seeds. Plants were also secured from the seed of numbers 3, 34 and 19, all plants of low alkaloidal content. Table III shows the results of the assays.

TABLE III.

Percentage of Alkaloids in the Leaves of First Generation Plants Grown from Seed from Selected Individual Plants.

	Percent of Alkaloids, Parent	First Stage	Second Stage	Average
3	Low	.524	.693	.609
34	Low	.479	.518	.498
19	Low	.493	.519	.506
12	High	.650	.882	.766
13	High	.640	.859	.750
7w	High	.617	1.063	.840
6w	High	.805	1.282	1.043

Attention is directed here to the striking superiority of plants 6w and 7w

over the others. Leaves from the second picking of 6w contained a percentage of alkaloids probably never met with previously in belladonna.

During the past summer, these plants have all been picked individually and while only a few of the samples have been assayed, the results so far indicate quite clearly that the individuals from 6w will average much higher than any of the others. This would go further to show that the individual plant 6w which shows to such advantage through 1911 and 1912 and whose first generation reproductions rank highest collectively the first season will serve as a good type to form the basis of further propagations. During 1912, close pollinated seeds were secured from this and several other good types and the plants from these seeds are now making their first year's growth and are being examined and tested individually. The parent plant 6w in now dead, but it is hoped that some of its reproductions will continue to prove equally good if not better. This fall cuttings are being made from the most desirable plants and it is believed that this method will prove the quickest and most productive means of propagation.

Some General Considerations.—The problem under discussion, like most problems in plant breeding and selection, must extend over a good many years. What has been accomplished thus far constitutes practically merely a beginning because we have not yet embarked on any breeding operations, but have only supplied the information and material necessary to make the application of the proposed methods possible. However, while in the actual solution of the problem only a step has been made, the future work will likely entail much less actual labor in that the many analyses which were necessary in the earlier phases of the work can be largely dispensed with and the investigation limited to a few selected plants.

It has no doubt occurred to you that the increase of alkaloids in the plant will in itself alone not relieve the economic situation. From what has been said of the relationship of the size and thriftiness of the plant, there exists the possibility that the plant richest in alkaloids may also prove to be a poor type from an agricultural standpoint. The ideal plant must, therefore, combine chemical and physical excellence in order to constitute the best plant from both the therapeutic and agricultural standpoint.

Much has been said and written regarding the influence of soil and climate on the production of alkaloids and the conclusions reached have varied greatly. In view of the great variation existing in individual plants as shown here, grown under identical conditions as regards soil and climate, it must be plain that little if any importance can be attached to experiments designed to show the influence of these factors until a type of plant can be secured which shows the minimum amount of individual variation. Numerous instances are found in literature where differences in the alkaloidal content of belladonna plants which are claimed to be the results of fertilizers or climatic conditions are considerably less than variations found in the fifty-nine plants here studied. There is no doubt that environmental factors have some influence but the extent of such influences can not be studied under present conditions with any degree of certainty.

This investigation has offered us a splendid opportunity to study the belladonna plant itself. Time will not permit the discussion in any detail of the various points of interest that have been worked out in this connection. Suffice it to

say that we have found a practical way to grow belladonna from seed that eliminates the difficulties of field sowing. The various details regarding the germination of the seed have been worked out. Furthermore, the abundant material on hand made it possible to study thoroughly the distribution of the alkaloids in the various parts of the individual plant; the development of alkaloids in the seedlings and early stages of growth and the relative concentration of alkaloids in the leaves with relation to age and size.

As has already been said, belladonna was chosen for this work for certain reasons. If the problem is finally brought to a successful conclusion its value will lie not so much in what has actually been done with one plant as in the fact that it points the way to the possibility of a broader application of similar methods to our field of medicinal plants.

SENSITIZED VACCINES.*

F. E. STEWART, PH. G., M. D.

Sensitized Vaccines, Sero-Vaccines, or Sero-Bacterins, are suspensions of pathogenic bacteria, living or dead, artificially sensitized by treating them with immune homologous serums, i. e., serums from animals immunized against bacteria of the same kind as those used for producing the Vaccines. By this means the amboceptors contained in the immune serums are made to combine with the bacteria and sensitize them, so when they are injected into the body the complement and phagocytes normally present in the blood of the injected individual immediately combine with and digest them, and the resultant products stimulate the tissue cells to produce antibodies to which the subsequent immunity resulting from the vaccination by the sensitized vaccine is due.

How the Immune Serum is Obtained.—The immune serum for making sensitized vaccines is usually prepared by treating goats intravenously, first, with dead, and later with living cultures of bacteria. Trial bleedings are made at regular intervals, and the serum is tested for amboceptors and other specific antibodies. When the serum shows a sufficiently high titre, a large quantity of blood is withdrawn for use in preparing the sensitized vaccine.

How Vaccines are Sensitized.—The bacterial cultures to be sensitized are added to a little physiological salt solution, emulsified, turned into a vessel containing the immune serum, allowed to macerate for a few hours, the clear and slightly opalescent liquid separated from the deposit of bacteria, and the latter washed by centrifugalization several times in physiological salt solution until the last traces of serum disappear. The white mass thus obtained is of a pasty, semi-liquid consistency, and after standardization by bacterial count, and the addition of physiological salt solution in proper amounts, produces an entirely homogenous emulsion which constitutes the sensitized vaccine.

*Read before the Seaboard Medical Association, Norfolk, Va., December 9, 1913.

How Sensitized Vaccines Were Introduced to Science.—Sensitized Vaccines were introduced to science in 1902 by Besredka, a scientist connected with the Pasteur Institute, and have gradually and progressively attracted as knowledge concerning them has been developed by Besredka and his associates. Among the latter are Garbat and Meyer, Gordon, Broughton-Alcock, Boinet, Cruveilhier, Bertrand and Feigan, and other investigators. The researches have been carried on at the Pasteur Institute and l'Hotel Dieu, Paris, also at St. Bartholomew's Hospital, London, and other well-known institutions. One of the sensitized vaccines, that is used for immunizing against bubonic plague, is prepared from killed sensitized plague bacilli, and is now official in the French Codex.

What is Meant by Sensitization.—Normal blood serum, owing to the alexin or complement it contains, and the small amount of natural amboceptor present in the blood, possesses in some degree the power of digesting bacteria and other protein substances. This power is enormously increased during the process of parenteral digestion. This is due to the stimulating effect upon the tissue cells of the protein introduced. For, if a protein is introduced into the tissues, the tissue cells are stimulated to produce a specific amboceptor, the function of which is to sensitize the protein and thus prepare it for digestion. This digestion is accomplished by the joint action of amboceptor and complement. (Vaughan says that all digestive enzymes are composed of amboceptor and complement.)

But the complement cannot act upon the protein until the latter is first sensitized by the amboceptor. Amboceptors are *specific*, and the kind of amboceptor produced by the tissue cells depends upon the kind of *antigen* (protein) used to produce it. The digestion is called *lysis*. Hence we have bacteriolysis produced by the joint action of specific bacteriolytic amboceptor and complement upon the kind of bacteria injected into the tissues.

When unsensitized killed bacteria (bacterin) are injected into the tissues, all of this complicated process of parenteral digestion must be carried on by the body cells to produce the specific amboceptor and other antibodies to which the value of the bacteria as an immunizer is due. In preparing sensitized vaccine, the bacteria are artificially sensitized by the amboceptor in the specific (homologous) serum before injection, and thus prepared for the immediate action of the complement already present in the blood of the individual injected.

For What Sensitized Vaccines are Used.—Sensitized vaccines are used against typhoid fever, rabies, plague, cholera, and other infectious diseases, and are also employed in their treatment. Several thousand people have been immunized by their use, and they have also been quite extensively employed as therapeutic agents by many competent observers. Further researches are necessary to determine their merits in comparison with bacterial vaccines prepared by the Wright method, also to ascertain the comparative value of sensitized vaccines prepared by sensitizing living cultures and cultures killed by heat.

How Sensitized Vaccines Act: Garbat and Meyer's Explanation.—In explaining the action of sensitized vaccines, Besredka refers to the researches of Garbat and Meyer. These investigators claim that bacteria are typical cells consisting of an external protoplasmic envelope and an internal nuclear portion. When they are disrupted by the action of amboceptor and complement, the outer portion is

digested and the inner portion set free. Both portions are toxic; both give rise to individual immunizing substances by stimulating the tissue cells to produce them.

Vaughan's Explanation.—As the explanation of Garbat and Meyer resembles in some particulars the teachings of Vaughan and his associates, I wrote to Professor Vaughan in regard to sensitized vaccines, and asked further information on the subject from his view-point. His reply proved very interesting to myself and friends, and became the subject of considerable debate. Thinking that you might be interested in Professor Vaughan's letter and also in the debate following its reading, I am now presenting both to you for consideration. My paper also contains valuable information taken from the papers of Besredka and his followers, and pertaining to the subject before us:

ANN ARBOR, MICH., November 8, 1913.

DEAR DR. STEWART—It seems to me that the action of sensitized bacteria compared with unsensitized bacteria is best explained by my theory. Probably it will be best to first state my theory and then see how it applies to sensitized bacteria. A protein sensitizer or anaphylactogen (called by others antigen) is a protein substance which when injected into animals causes certain body cells to produce a specific proteolytic ferment. This specific ferment digests and destroys its homologous sensitizer or the protein which has caused its development. This ferment, like all other ferments, consists of amboceptor and complement. Now let us apply this to sensitized bacteria. Bacteria, typhoid bacteria for instance, are sensitized by submitting them in vitro to immune serum. These bacteria thus are saturated with their specific amboceptors and when such sensitized bacteria are injected into an animal they are already fitted for complete digestion. In the animal the complement acts upon the prepared bacteria and their digestion is complete. So complete is their digestion that a large part of their poisonous constituents is destroyed and the animal is immunized by the non-poisonous constituent of the sensitized bacteria. For this reason the animal treated with sensitized typhoid bacteria shows little disturbance, while on the other hand, the animal treated with unsensitized bacteria must elaborate both amboceptor and complement. This takes time, the period is longer, the digestion is less complete, more of the poison is set free, less of the poison is destroyed in the process of digestion, and consequently the life of the animal is placed in geater jeopardy. Garbat and Meyer believe that immunization is secured only by the poisonous constituent, or constituents of the typhoid bacillus. According to my theory, the poisonous constituent of the typhoid bacillus has nothing to do with the production of immunity or sensitization. Sensitization and immunity are induced by the non-poisonous part of the typhoid bacillus. Subjecting the typhoid bacillus in vitro to immune sera, in other words, sensitizing the bacteria in vitro, prepares the bacteria for digestion, and when introduced into the body they are digested speedily and completely, or so nearly completely that a large part of the poisonous part of the bacterial molecule is destroyed. It seems to me that if the article by Garbat and Meyer is read with my theory in view, it is confirmatory of that theory. It has been shown by Friedberger, myself, and others, that very small amounts of the protein poison produce an elevation in temperature. Large amounts produce a depression in temperature. Sensitizing with immune serum in vitro prepares these bacteria for ready and complete digestion as soon as they are introduced into the animal body. Therefore, there is less disturbance in the animal body when sensitized bacteria are introduced than when unsensitized bacteria are given. This is the way I look at it.

I don't know whether I have made myself clear on this point or not. I know that I have been able to sensitize animals with the non-poisonous part of typhoid bacteria. This non-poisonous part which I have obtained has been secured by a crude method. The non-poisonous part which is split off by sensitizing bacteria with immune serum is a much more efficient preparation than mine. The point that I insist upon is that the sensitizing group in the protein molecule, and this of course means the immunizing group, is not the poisonous group, but is found among the non-poisonous groups. The poisonous group in all proteins is much the same, physiologically the same, chemically there must be fine differences, while the sensitizing group is not the same in any two kinds of proteins; hence its specificity.

I may be cranky on this subject. I think that the nomenclature of Ehrlich has been wrongly applied to sensitization and to bacterial immunity. The protein poison is not a toxin; it is a poison. It produces no antibody. Yours,

V. C. VAUGHAN.

Parenteral Digestion in Relation to Infection and Immunity and the Action of Vaccines.—This letter of Vaughan becomes far more interesting after reading

his most instructive book entitled "Protein Split Products in Relation to Immunity and Disease."[1]

In his book he explains how the tissue cells of the animal body have the power of digesting and producing enzymes for so doing. Digestion carried on outside of the alimentary canal by the tissue cells is called by Vaughan "Parenteral Digestion."

The questions arise why bacteria, many kinds of which live as commensals (at the same table) on the skin and mucous membranes of the body, feeding as saprophytes on dead matter, including worn-out epithelial cells, excrementitious matter, particles of food, etc., do not attack the living tissues and become parasites? And, in case they do become parasites, and obtain their sustenance by preying upon the tissues, how does the body get rid of them?

Vaughan attempts to answer these questions in his way, Metchnikoff has another way of answering them, Ehrlich another, Wright another, Besredka another, and so on. Each of these views resembles each other in many respects, and diverge in others. They cannot all be harmonized and I shall not attempt in this debate to harmonize them. But there are certain points which need connecting to make the subject before us intelligible to those who have been following Wright in his theories of infection and immunity, and employing Wright's bacterial vaccines in their practice. Besredka's sensitized vaccines appear to be a marked improvement upon Wright's products, and it is an important matter for us to decide whether they are or not. Let us therefore consider the theories underlying the subject, hoping to get a clear idea of Besredka's claims and the investigations upon which they are founded.

In answer to the questions, why do not the bacteria living with us as commensals become parasites, and when they do become parasites, how does the body get rid of them, all authorities agree in the following answers: The tissues of the body possess natural resistance to the action of enzymes, including the action of the enzymes secreted by the bacterial cell. This resistance, when especially marked, is called *immunity*. When bacteria succeed in overcoming this resistance, and invade the body as parasites, the tissue cells secrets specific enzymes which digest and destroy them.

According to Vaughan, infectious diseases are groups of symptoms caused by the parenteral digestion of bacteria, especially by the splitting up of the bacterial protein. This, Vaughan teaches, is split into several portions, viz., a primary chemical group, or archon (keystone), with which are connected secondary or even tertiary groups. When the protein molecule is split up by disrupting agents, including digestive ferments, the archon is set free to a greater or less extent. This archon is poison. Its poisonous character is due to its great affinity for the secondary groups. When the secondary groups are digested the archon aids the digestive enzymes in breaking down fresh protein molecules, and the digestion proceeds onward. The primary, or poison group causes the toxic symptoms of the infectious diseases. The non-poisonous or secondary group stimulates the

[1]"Protein Split Products in Relation to Immunity and Disease," by Victor C. Vaughan, M. D., LL.D., published by Lea and Febiger, Philadelphia and New York, 1913.

tissue cells to produce a special and specific proteolytic ferment or enzyme which has the power of rapidly digesting and destroying the homologous protein. Immunity to another attack of the disease is due to the rapid digestion of the invading bacteria upon subsequent exposure. The bacteria are thus destroyed before they have an opportunity to multiply.

Vaccines are prepared by attenuating by various means the disease-producing bacteria so that they are unable to cause infection, yet the bacterial protein still retains the power to produce the specific proteolytic ferment upon which immunity depends,—that is, according to the hypothesis of Vaughan. When a vaccine is used in the treatment of an infectious disease, this proteolytic ferment is produced in excess of the quantity required to digest the vaccine itself, and the excess is employed in digesting and destroying the invading pathogenic bacteria.

Various Teachings Compared with the Teachings of Vaughan.—We are taught by Metchnikoff that invading disease germs are destroyed by the white blood corpuscles or leucocytes, called by him phagocytes or "cell eaters" because they ingest and digest the bacterial cells. This does not conflict with that of Vaughan, for the phagocytes undoubtedly depend upon the ferments they contain for their proteolytic function.

How about the teachings of Ehrlich and his associates? They say that the destruction of invading bacteria is accomplished by the action of amboceptor and complement upon them, and that the value of bacterial vaccines lies in the fact that their injection into healthy tissues stimulates the tissue cells to produce a large excess of amboceptor which sensitizes the invading bacteria and thus prepares them for the destructive action of complement. *How does this view agree with that of Vaughan?* It is immediately apparent that the only difference is essentially one of terminology.

How do Vaughan's teachings agree with those of Wright, who says that the invading bacteria are destroyed by phagocytes only after they have first been prepared for ingestion by opsonins? It is evident that the opsonic properties of the serum are merely a manifestation of the action of the specific proteolytic ferment.

How does the explanation of the action of sensitized vaccine given by Garbat and Meyer and endorsed by Besredka, harmonize with that of Vaughan? This question is answered by Vaughan himself as follows: "Garbat and Meyer believe that immunization is secured only by the poisonous constituent, or constituents of the typhoid bacillus. According to my theory, the poisonous constituent of the typhoid bacillus has nothing to do with the production of immunity or sensitization. Sensitization and immunity are induced by the non-poisonous part of the typhoid bacillus."

The Relative Value of Living and Killed Sensitized Bacteria for Immunization.—In Besredka's earlier experiments killed bacteria were used. Further investigations, first on animals and then on man, demonstrated the harmlessness of certain sensitized living bacteria, and in anti-typhoid immunization the sensitized living bacteria are now preferred by Besredka and his followers.

Why are living bacteria preferred? It is generally conceded by authorities that immunity obtained by living viruses is more substantial than that resulting from

the use of killed virus. However, up to April, 1913, Broughton-Alcock has "seen no advantage of the living sensitized gonococci over those allowed to die."[2] Is there no danger of carrying contagion with living sensitized pathogenic bacteria? Besredka claims that there is no more danger of carrying contagion from living sensitized bacteria than there is from living smallpox vaccine, and that there is no danger from either.

Are sensitized bacterins prepared from killed cultures superior to unsensitized killed bacterins? Yes, according to Besredka, "Whatever be the nature of the virus, whether it be a question of bacteria of pest, of dysentery, of cholera, or of typhoid fever, whether it be a question of rabies virus, of diphtheria toxin, whether the bacteria are killed or living, sensitization confers upon them new properties which make them vaccines of the first order, and which are characterized by an action, *sure, rapid, harmless,* and *durable.*"

How do unsensitized living bacteria compare with unsensitized killed bacteria for the production of immunity against typhoid fever? Results obtained by Besredka and Metchnikoff in the immunization of chimpanzees against typhoid fever demonstrates that sensitized living germs gave absolute protection, causing but slight fever and reaction, while killed bacilla failed to protect adequately.

Is there no danger of acute infection from such procedure? Apparently the method is harmless, as Besredka reports that about ten thousand persons, men, women, and children, have been vaccinated without a single mishap of any kind.

Is there no danger that in some persons the injection of living bacilli might lead to the development of a carrier state? No cases of the kind have been reported in relation to the ten thousand persons immunized. Seven hundred of these cases were tested, and no typhoid bacilli found either in the feces or urine.

How do Besredka's results with living sensitized cultures compare with those obtained by the armies of the United States and of foreign countries with killed cultures? The results obtained by immunization with killed typhoid cultures in the armies of the world abundantly demonstrate that adequate protection against typhoid fever is obtained in this manner. However, according to Besredka's general verdict concerning the improvement in the vaccine produced by sensitization itself, killed sensitized vaccines are superior to killed unsensitized vaccines in all cases.

Sensitized vs. Unsensitized Bacterins. Is there anything to be gained by using sensitized killed bacteria for immunization? According to the statement by Besredka above quoted, there are many advantages to be gained by sensitizing the killed bacteria before injecting them for protective purposes.

What are the advantages? Freedom from the negative phase, freedom from local soreness and freedom from marked systemic reactions, and more rapidly acquired immunity.

What is meant by more rapidly acquired immunity? Experiments in the British army demonstrated that antibody formation following a dose of unsensitized killed bacteria administered for the prevention of typhoid fever, requires several days, and does not reach its maximum until the ninth or tenth day. Experiments

[2]"Vaccination for Various Infections with Living Micro-organisms," by W. Broughton-Alcock, Lancet, London, April 26, 1913.

by Besredka and his followers demonstrated that the maximum immunity following an injection of sensitized bacteria is reached in from twenty-four to forty-eight hours.

Dosage. What doses should be employed, and at what intervals should they be given, when killed sensitized bacteria are used for phophylaxis against typhoid fever? Want of experimental data on this subject makes of this a hypothetical question, requiring an answer of similar character. In the first place, if we accept Besredka's general verdict to the effect that sensitization confers upon bacterial vaccines certain properties which markedly increase their efficacy, whether prepared from living or killed cultures, we must apply the verdict to killed sensitized typhoid bacilli. Secondly, the doses successfully employed by Besredka's associates in treating typhoid fever are very much larger than the doses recommended by Wright and his followers for therapeutic use, when killed cultures are employed. Broughton-Alcock's impression from experience is that great value lies in large doses. He begins with 500 to 3000 million killed gonococci, and has also found it to be a safe and beneficial procedure to commence with 20 million killed staphylococci and 200 million killed gonococci.

What dosage should be employed in the treatment of infectious diseases? Gordon reported excellent results from the use of killed sensitized strepto-bacterin in a series of cases treated at St. Bartholomew's Hospital. He employed the "intensive" method, which consists of giving rapidly increasing doses at brief intervals. The dosage in the four following cases illustrates his method:

In Case 1—(A girl suffering from erysipelas) he administered 100 million sensitized streptococcus vaccine as the initial dose, 24 hours later 500 million, and on the following morning 1000 million. Three days later the child was quite well.

In Case 2—(A nurse with cellulitis of the scalp and cervical adenitis), the patient was given an initial dose of 100 million, the following day 500 million, and 24 hours later 1000 million. Two days later the erysipelas subsided, the temperature fell, and convalescence ensued.

In Case 3—(A patient suffering with an acute attack of erysipelas of the forehead and cheeks), three successive doses of 100, 500 and 1000 million sensitized streptococcic vaccine were given at 24-hour intervals, followed by a prompt cure.

In Case 4—(A patient who suffered from a compound fracture of the lower end of the left humerus which had suppurated, and cultures from which showed streptococcus pyogenes), a single dose of 100 million (this may be a typographical error; possibly 1000 million is meant) sensitized streptococcus vaccine was given. The local condition improved and the pyrexia subsided.

The dosage employed by Boinet in treating typhoid fever illustrates another system of dosage. He says: "The best results follow the use of doses of 2 cc., repeated daily during four consecutive days, if the disease is grave, but three consecutive days if the disease is mild." He used the living sensitized germs.

In reporting cases, other observers, while careful to state intervals, neglect to inform us as to the size of the doses. Broughton-Alcock reports cases of gonorrhea, acne, sycosis, furunculosis, impetigo, and seborrheic eczema, treated with appropriate sensitized living bacteria. In cases of acute and chronic gonorrhea without complications, the serobacterin was apparently without benefit. In cases of orchitis, epididymitis, and in gonorrheal arthritis and periarthritis, good results were invariably secured. In every case following the second injection, and in many cases following the first injection, the pain ceased and the swelling was notably diminished. The arthritis and periarthritis were arrested. To avoid

relapse, the injections were repeated. It is important to know the size of doses and intervals to give these reports proper educational value.

Summary of Besredka's Claims in Regard to Sensitized Bacterins.—The most striking characteristics of sensitized vaccines are:

1. They produce but slight local reaction (inflammation at site of injection),
2. They cause no general reaction (malaise, increased temperature, etc.),
3. They may be given in much larger doses and much more frequently than the unsensitized bacterins (every 24 hours),
4. The immunizing effect is almost immediate (manifesting itself within from 24 to 48 hours),
5. They sometimes give successful results in very late stages of a disease, when no response is secured from the ordinary bacterins, and even serum treatment is ineffective."[3]

According to Besredka, "whatever be the nature of the virus, whether it be a question of bacteria, of pest, of dysentery, of cholera, or of typhoid fever, whether it be a question of rabies virus, or diptheria toxin, whether the bacteria are *killed* or *living*, sensitization confers upon them new properties which make of them vaccines of the first order, and which are summed up in an action *sure, rapid, harmless* and *durable.*"

REFERENCES.

Broughton-Alcock, Lancet, 1912, vol. ii, Aug. 24, pp. 504-8.
Besredka, Bull. de l'Inst. Pasteur, 1910, p. 241.
Gordon, Lancet, June 28, 1913, pp. 1796-1801.
Babes, Annals de l'Inst. Pasteur, Oct., 1891, vol. v. No. 10, p. 625; Bull. de l'Acad. de Med., 1895, 3d Series. vol. xxxiv, pp. 206-14.
Gordon, Quarterly Jour. of Med., 1912, vol. v, pp. 509-15.
Beinarowitch, Arch. des Sci. Biol., 1898, vol. vi, p. 234.
Calmette and Salimboni, Annals d'l'Inst. Pasteur, 1899, p. 865.
Theobald Smith, Jour. Exper. Med., 1909, vol. xi, p. 241.
Besredka, Compt. Rend. de l'Acad. Sci., 1902, vol. cxxxiv, p. 1330; Annals de l'Inst., 1902; p. 1918.
Ehrlich and Morganroth, Berl. klin. Woch., No. 1, 1899.
Besredka, Bull. de l'Inst. Pasteur, 1912, p. 527.
Garbat and Meyer, Zeit, für Exper. Pathol., July 29, 1910, p. 1.
Ardin-Deltiel, Negre, Raynaud, Compte. de Soci. de Biolog., Feb. 28, 1913, p. 271.
Negre, Compt. Rend. de la Soci. de Biolog., June 6, 1913; p. 1177, Gordon, l. c.
Broughton-Alcock, Compt. de la Soci de Biolog., March 21, 1913, p. 613, Lancet, 1912.
Boinet, Compt. de la Soci. de Biolog., March 14, 1913, p. 507.
Cruveilhier, Compt. Rend. de la Soci. de Biolog., Jan. 10, 1913, p. 10; April 25, 1913, p. 806; July 4, 1913, p. 1377; July 11, 1913, p. 2; July 18, 1913, p. 67.
Bertrand and Feigan, Compte. de l'Soci. de Biolog., vol. lxiv, No. 21, p. 1224.
Vaughan, "Protein Split Products in Relation to Immunity and Disease," published by Lea and Febiger, Philadelphia and New York, 1913.
Broughton-Alcock, "Vaccination for Various Infections with Living Micro-organisms," Lancet, London, April 26, 1913.

WHAT SOME PHARMACISTS ARE FIT FOR.

F. A. BONGARTZ, MEMBER NEW JERSEY BOARD OF PHARMACY.

Since I have had to rate about one hundred and sixty papers of our last and my first State Board examination, and in view of the low standard of same, I think it would be well to enact a law disbarring about 33 1-3 percent of pharmacists from selling anything but shoe strings and postage stamps.

We should raise the standard, then protect the standard and give the public the benefit of the raise.—*N. A. R. D. Journal.*

[3]Bull. de L'Inst. Past., Tome VIII, 1910, 30 Mars, 6 PP. 241-253.

Papers Presented to Local Branches

THE CULTIVATION OF MEDICINAL PLANTS IN AMERICA.*

HENRY KRAEMER, PH. D., PHILADELPHIA.

The object of this article is to direct attention to the work which is being done in the cultivation of medicinal plants in the United States and the progress that has been made during the past few years in both the scientific and practical development of this phase of pharmacognosy. The aims of pharmacognosy are not only to prove the identity and to determine the quality of drugs, but to study the conditions that make for their uniformity and to ascertain the manner in which this uniformity may be maintained. Under existing conditions our studies must naturally begin with the crude dried drugs of commerce. Indeed, the latter are the official articles and the materials from which both isolated principles as well as the preparations containing them usually are made. Time and time again, however, in our studies of these crude substances our inquiries are directed back to the living plant for the solution of the questions in dispute.

Experience has shown that true scientific progress is only possible when we base our pharmacopoeial and other standard work on material which has been derived from growing plants under direct observation. The more we study the growing plant the more we come to the conclusion that our work, in the first place, should begin here, for at this point we have the answer in most cases to every unsolved query and the verification or check on the conclusions drawn from the facts obtained in the study of the crude materials. So that we may say, given the identification of the plant, the locality of its growth, the date of the collection of the drug, and method of its preparation for commerce, we have the principal factors we require for all basic work. With this information we should know much more about the quality of the drug and what the finished preparation would be than if the drug was collected at random at any time of the year and mixed with old and inferior lots or even good and superior grades. It is not too much to expect that eventually every bale of drug will have a label supplying this information and each lot will be kept separate, and if admixture is attempted this will be left to the judgment of the manufacturer and not to that of dealer or jobber.

The pharmacognocist being somewhat familiar with the origin, formation, distribution, and transportation of various plant principles, and it being well known by actual experiments that the amount and character of these substances is influenced by external factors such as climate and soil and possibly even meteorological conditions, is in a position to indicate at least a possible if not adequate explanation for the discrepancies in analytical work and what should be done to

*Read before the New York Branch, Dec., 1913.

establish a nearly uniform article. Furthermore, he is also familiar, by virtue of histological investigations, with the nature of the tissues and constituents as they occur in the recently dried drug gathered under ideal conditions, and the very great changes incident to the length of time of keeping, varying conditions of storing, etc., whereby interactions and changes among the substances themselves are brought about. Under existing conditions he who works on the finished product is at a very great disadvantage, whether he is the physician who prescribes the articles or the manufacturer who guarantees this product. In other words, there are changes in constituents in the plant due to conditions which affect its physiological activity and also changes in the drug which affect its medicinal constituents. So that the problem of obtaining a reliable drug is a very complex one. It is out of the question to begin our scientific studies with the crude materials of commerce concerning the origin of which and of whose marketing conditions we have no knowledge. It seems to me that there is but one point from which we can proceed with any degree of satisfaction, if we are to have drugs and preparations the guarantee of which may be assured, and that is that we must have the growing plants under competent supervision and scientific control.

When our forests and woods were full of wild plants and drugs they could be easily collected, there was hardly an incentive to consider the farming of medicinal plants. Now that they are becoming scarcer, the need is especially apparent. But our interest in the cultivation of medicinal plants is not primarily because there is a growing scarcity of the sources of supply, but our increased knowledge of crude drugs leads to the conclusion that, if manufacturing pharmacy is to develop to the same degree as the other branches of industry, it requires that rational methods be introduced if we are to attain the goal which the physician must expect of us. Of course, this requires research and investigation and an honest and sincere cooperation on the part of both pharmacists and the medical profession. The work of the physician is distinguished from that of the pharmacist in that he is dealing with a number of variables. His own diagnosis is not always uniform, his patient reacts more or less variously toward different medicines, and no two patients respond alike toward the same medicine. What definiteness can there be in any of his work, therefore, if in addition the preparation is of varying quality and of different strength whenever it is employed? The one constant in the equation must be the uniform quality of the drug, and this we must endeavor to supply as well as the physician should expect of us.

Without considering what is immediately practicable it is a safe rule, I think, to work from what is theoretically an ideal condition. We see that the theory of today is the practice of tomorrow and that upon the ideal of yesterday the success of the future is based. The tendency of the times is for men to become more thorough in their work at least in some special phase. One of the results of this specialization has been research. Investigations have given us a more complete knowledge and as a result of this we are very apt to be conservative regarding the things we know. Anyone who is a sincere student of drugs, and whether in research or in practical life is working out any problems, must come to the conclusion, sooner or later, that we are handling entirely too many drugs to have any very definite information regarding any of them and this does not apply only to the drugs of limited use but to those which have become the main-

stay of physicians. This, for instance, is seen even in such a widely known drug as digitalis, the investigation of which during the past few years has shown that even in the old world the pharmacopoeial standards are based upon nothing but tradition. Fortunately there is a tendency upon the part of some manufacturers, to concentrate their efforts upon a relatively few drugs and study them in relation to the growing plant throughout different periods of the season. These studies are of very great importance as they will enable the manufacturer to secure uniform preparations and it is very doubtful if this uniformity can be obtained under any other conditions. Should these experiments prove to be as successful as we believe they will be it opens up a future of very great possibilities. The effect of this on manufacturing pharmacy would indeed be most vital. It will establish a new era in this work. Instead of there being a few large firms each handling a thousand or more preparations, of which they can not have any very satisfactory knowledge, there will be a thousand manufacturers, depending of course upon initiative and enterprise, each of whom will make preparations of a limited number of drugs to which he gives a reasonable guarantee and the physician will have the satisfaction of knowing the capabilities of any drug which he chooses to employ.

The condition at the present time that prevails in the United States as well as in other countries on this question of bringing medicinal plants under cultivation reminds me very much of the condition in which aerial navigation was some twenty years ago. I happened at that time to be interested in this question and I found that there were several thousand people who were either on paper or practically engaged in experiments on this subject. No one could dream at that time that aviation would be established on a practicable basis as it is. So we find on the subject of the cultivation of medicinal plants that there are many thousand of inquiries regarding the possibilities of this subject, I myself having received not less than two hundred letters during the past four or five years on this question. These inquiries come from both pharmacists and persons who for one reason or another would like to get back to the country and have some definite work to do. Most of these inquiries are very difficult to answer satisfactorily. For instance, a very common inquiry is this: "I have forty acres, partly woodland and partly open country and would like to use it for the growing of medicinal plants. Kindly let me know what plants to grow." Another will say: "I am very much interested in the possibilities of growing medicinal plants. Kindly give me the names of such plants as you think I can profitably grow, and also tell me how to grow them." Others will ask specific questions such as, "Can ipecac be grown in one of our large northern cities?" Others again will write for the names of books on the subject of cultivating medicinal plants. Some few people ask for seeds or plants and seem to feel that you are honored by their requests for supplies. Many of these requests are from persons who have never had any practical experience in growing plants. They may have had some interest in keeping up a garden but their ideas on this subject are that all that is necessary is to give them some particular direction and they will have no trouble to work it out. Nearly all of these inquiries come from persons who know nothing about the commerce of drugs and have no idea of the problems connected with the disposition, drying, curing, and marketing of them. They pos-

sibly have been thrilled by that wonderful story of "The Harvester," or have read the alluring advertisements of "nuggets of gold," in golden seal. Now it happens that as there is no royal road to learning so there is no hewn path which leads to success in the growing of medicinal plants. It is true that some experiments have been conducted and we have some little general information as to how to proceed with the work, but at the best it is in a primitive stage requiring active intelligent pioneers to bring the subject upon a practical basis. It may be pointed out, however, at the outset that no one can grow medicinal plants without having some training and special education in growing plants. Again, unless one knows a good deal about practical conditions in the drug trade, that is in regard to the drug market and prices paid for drugs, even though one does succeed in making a good crop he may not be able to dispose of it. It would seem that a practical pharmacist would succeed best, even though he lacked a practical knowledge of growing plants. For while he may lack a knowledge of agricultural requirements yet by virtue of the fact that there are so many agricultural experiment stations and colleges where this practical information may be obtained, both through correspondence courses and through special practical courses, frequently given during the holiday periods, this deficiency may be made up. On the other hand, the inside information which gradually must amount to intuition regarding the crude drugs of the market can only come after a rather long practical experience. Of course there will be exceptions in this latter case, as the first successful marketing of oil of peppermint in this country was through the common sense of a Mr. Hotchkiss, the keeper of a country store in the village of Phelps, Ontario County, New York.

As has already been stated it is rather difficult to lay down any rule which one can follow invaribly on this subject. In fact, very little work has been done to enable us to draw other than very broad conclusions. The first thing that one naturally would consider is locality. We would, of course, not expect to grow tropical plants in a temperate zone, nor mountainous plants at the seaside, although even here there are exceptions and nothing but experiment can reveal them. Then again, there are plants which only grow in the rich soil of the woods, others will grow in the open and on gravelly banks, where the soil is rather barren. In addition there are plants, such as belladonna and cannabis and sativa which grow only on certain kinds of soil, which do not seem to have been successfully cultivated except in a calcareous soil. This may explain why many attempts to cultivate those plants in certain localities in the United States have not been successful.

It is very important in beginning this work in a new locality for one to make a rather careful survey of the plants that are growing wild or have become naturalized. Within certain limits it would be safe to say that if there are a number of genera of any family well represented, and that if the plant which one desires to experiment with has something of the habits of the species represented, there is a probability that it may be grown successfully. Even this can sometimes be ascertained by the nature of the plants that have been brought under cultivation. For instance, digitalis might be grown very successfully in the vicinity of Philadelphia as there are a number of private grounds in which it has become naturalized. By a priori reasoning, if one wished to go into the

cultivation of licorice, the ideal location for growing the plant would be in the west and northwest where the wild licorice, *Glycyrrhiza lepidota,* is indigenous.

It is necessary to study the best ways of propagating the plant one wishes to grow. Sometimes this is by means of seeds, as in the case of belladonna and digitalis; at other times it is by propagation of rhizomes, as hydrastis and glycyrrhiza; or again by rootstocks or prostrate stems as in the mints. Sometimes both seeds and cuttings may be used as in the case of hydrastis.

Plants Grown from Seeds.—Most plants can be grown from seed, and Mitlacher (in Zeitsch. f. a. landw. Versuchswesen in Oesterreich) has given the results obtained with rhubarb, valerian, poppy, matricaria, lavender, hyoscyamus, gentian, pyrethrum, althaea, aconite, etc. When plants are grown from seeds, escpecially if in a temperate climate where the growing season is rather short, it is necessary to begin the germination of the seed early in the spring. This must be done then in the house or under conditions where there is some protection. These seeds may be sown either in small boxes or in seed pans, i. e. shallow, square flower pots, in which the soil is quite sandy or made up largely of broken granitic rock. The soil must be clean and free from organic matter which is likely to mould. The seeds should not be planted too deep and should be covered with glass so as to condense or hold moisture. Of course where there is the necessary attention as far as keeping the earth moist is concerned, this can be dispensed with. The time required in germination will vary considerably. Many seeds will germinate well within two weeks; usually probably four or five weeks is necessary. Occasionally some seeds, as with roses, may require a year or two before they germinate. The present tendency is to shorten the period of germination in several ways. The simplest, possibly, is to place the seeds in water for 24 hours. When the seed coat is somewhat resistent germination may be hastened by pouring boiling water upon them. Again, some special treatment may be given them as the use of dilute or even concentrated mineral acids. In the cultivation of maté for many years it was found that the seeds would not germinate unless they had previously passed through the alimentary tract of certain birds. Later it was found that the same end could be obtained by placing the seeds for a short time in solutions of hydrochloric acid. F. A. Miller reports that he has obtained good results in the case of belladonna by first placing the seeds for thirty or forty seconds in concentrated surphuric acid. The germination of seeds may also be hastened by certain mechanical means. This is used when the seed coat is particularly thick and not easily penetrated by the moisture, when if they are large they are filed in one or two places. If they are small they may be shaken with sharp angular sand until the exterior is somewhat roughened.

After the seedlings have a few leaves upon them they are then set out in suitable boxes known as "flats." These are about three inches deep and about two feet square and the soil used should be of a sandy character, containing a certain amount of nutriment. The plants must be watched at this point to see that there is not damping off and loss by reason of the attacks of micro-organisms in the soil.

Should there be a damping off and loss of seedlings then one must study methods for overcoming this. Recently the Department of Agriculture(Carl Hartley, Proc. Society of American Foresters, March, 1912, pp. 96-99.) has

utilized dilute sulphuric acid for this purpose and which I have shown (Proc. American Philosophical Society, April, 1906, pp. 157-163.) is the active principle produced whenever sulphur is used in the greenhouse, and that it is one of the most effective agents for the destruction of insect pests as well as the blights due to fungi and other micro-organisms.

The seedlings are allowed to grow in the "flats," until they have developed a good root system and have three or four leaves. Before placing them directly in the soil out of doors they are acclimated or hardened by placing them in cold frames. This transferal should be done not later than the early part of May. The structure and use of the cold frame is perfectly familiar to the practical gardener. Information regarding the construction of this accessory to the garden can be had of any of the seedsmen. In fact, in many instances, they publish small booklets entitled "Vegetables Under Glass," giving information on the tilling of soil during the entire year, and these booklets can be had at a very moderate figure. Sometimes the plants are removed from the flats and placed directly in the soil in cold frames. This may give a temporary setback to the plants as the roots are more or less disturbed by the operation but if one wishes to continue the experiment in the cold frames, later removing the sash, considerable time will be saved.

If the plants are to be transplanted out of doors it is very desirable that this should be done as soon as possible after the last days of the possibility of frost are likely to occur in any given locality. The plants are arranged in rows and set sufficiently far apart so the maximum crop per acre can be obtained. Usually they are so arranged that weeds may be pulled out and the ground worked over.

The above outline may be used for the propagation of most plants by seedlings but they must be carefully cared for if one wishes to get maximum results. Some plants are rather easily grown if care is taken with their culture, as digitalis and belladonna. Other plants, like hyoscyamus, are with some difficulty cultivated, and very few persons, even seedsmen, are uniformly successful in growing aconite. Several good practical papers have been published on the cultivation of digitalis, namely one by Newcomb (American Journal of Pharmacy, Nov., 1911), and another by Borneman (ibid. Dec., 1912.) Some facts regarding the growing of Hydrastis from seed are given in a bulletin of the Bureau of Plant Industry, U. S. Department of Agriculture, by Alice Henkel and G. Fred Klugh. The subject of growing ginseng from seed is also considered in a bulletin of the Division of Botany, U. S. Department of Agriculture, by George V. Nash. At the present time there is considerable interest in the growing of Eucalyptus globulus and other species of Eucalyptus, seeds of which can be obtained from J. M. Thorburn and Company, New York City. A very valuable monograph on "The Eucalyptus cultivated in the United States" was prepared by A. J. McClatchie, and published as Bulletin No. 35 of the Bureau of Forestry, U. S. Department of Agriculture. In addition to these special plants which have been mentioned there are a large number of plants yielding medicinal products which are grown from seeds and require no more care than the usual garden plants. Among these are calendula, Chrysanthemum roseum, Echinacea, and a number of plants grouped under sweet, pot, and medicinal herbs.

Propagation by Cuttings.—This is a common method of propagating plants. A cutting is a severed portion of a stem having one or more nodes or buds. They are derived from over-ground shoots, as in carnation, rose, geranium, and coleus, or, where the plant produces rootstocks or rhizomes, they are made from these rather than from the over-ground shoots. In propagating plants from rhizomes the latter are cut into pieces, each of which has one or two buds, and these pieces are planted.This propagation by means of cuttings or rootstock is extensively carried on in the cultivation of peppermint. A. M. Todd, who has been growing peppermint on a very extensive scale, has given in some detail the method of propagating this plant in an article published in the Proceedings of the A. Ph. A. for 1903, p. 277. A later article on the cultivation of peppermint in the United States is one prepared by Miss Henkel and published as Bulletin No. 90, Bureau of Plant Industry, U. S. Department of Agriculture. Hydrastis is another drug, the plant of which is commanding considerable interest and is being propagated by means of rhizomes. There are three good articles which treat of the practical cultivation of hydrastis, namely, one by John Uri Lloyd in Proceedings of the A. Ph. A., 1905, p, 307[1]; another by Alice Henkel and G. Fred Klugh, in Circular No. 6, Bureau of Plant Industry, U. S. Department of Agriculture; and a third by J. C. Baldwin in the American Journal of Pharmacy, April, 1913.

In the case of both ginseng and hydrastis one-year-old plants are frequently supplied by growers, and while taking everything into consideration this is not desirable, yet there may be conditions where, for experimental purposes, they may be used. It should be emphasized that it is not merely a matter of getting rhizomes or young plants but a very careful study should be made of the soil and light conditions which favor the maximum returns from the crop. The use of manure for increasing the yield of both crop as well as constituents should proceed with a good deal of caution until we know more about the subject.

Collecting and Drying of Drugs.—In many of the text-books on Practice of Pharmacy and on Pharmacognosy will be found general statements with regard to the collection and marketing of plant drugs. Some of the large firms also supply collectors general rules that should be followed. In addition, in nearly all of the drug journals will be found, if one goes over the files carefully, a certain amount of information bearing on these questions. When one, however, is farming drug plants, these questions become exceedingly vital for not only do the constituents vary at different times of the season but there is considerable variation in the amount of drug obtained. This information can be obtained only by the collecting of the drug at different times during the season and assaying the material and making preparations from it. For instance, experiments thus far seem to show that belladonna leaves collected in July and August show a higher toxicity than those gathered in September or October. It is quite possible that after the removal of the leaves high in alkaloidal content in July, another crop can be obtained by October. It is important to bear in mind that with some drugs a very slight difference in time of gathering and manner of drying, a great variation of the active constituents may be found, and this applies

[1]See also Journ. A. Ph. A., Vol. 1, p. 5.

especially to the composite flowers, as in the case of insect flowers, and santonica. It is only when they are in the bud condition that they show the highest amount of active principle. Again, depending upon whether an article is gathered to be put upon the market or whether the active principles are to be isolated as in the manufacture of essential oils, different methods are to be followed, depending upon the nature of the plant and what previous experiments have demonstrated should be advisable. For instance, while in the preparation of oil of peppermint the herb is first dried, yet in other cases the collected material must be previously macerated in order to obtain the largest yield of oil as with those plants yielding volatile oils containing either cyano-benzaldehyde or methyl-salicylate.

Too much attention cannot be given to the entire question of the harvesting of the crop and proper methods of drying, and of course, again, depending upon the locality, different methods will be followed. There are some localities where at certain times it would be quite possible to dry the drugs out of doors. In other situations it would be necessary to dry them in barns and even in specially constructed drying ovens where artificial heat would be employed. Newcomb has constructed a special oven for the drying of digitalis leaves (American Journal of Pharmacy, May, 1912, p. 207). The drying of leaves, flowers, and seeds is comparatively simple and can usually be rather quickly performed without any special construction. In the case of roots and fleshy fruits the drying should be under special protection and is facilitated more or less by slicing or comminuting the article.

Relative Value of Drugs from Cultivated and Wild Plants.—For some years it has been a question whether the activity of drugs obtained from cultivated plants is equal to that of those derived from wild plants. We find in some of the foreign Pharmacopœias the specific statement that certain drugs as digitalis, belladonna leaves, and belladonna root, must be derived from wild plants. This would naturally lead to the inference that wild plants are better and yet it may be that this provision was made with the intention of securing uniformity in drugs rather than because the materials from wild plants are superior. In 1907 Mr. Rippetoe conducted some experiments in Virginia which showed that cultivated plants of belladonna yielded both leaves and roots which were equal if not superior to the average drug on the market. As this work was done without any particular care and in a limited way, it was more than gratifying to those who were especially interested in this subject. These results were published in an article in the American Journal of Pharmacy for November, 1907.

Careful comparative experiments on an extensive scale and for a number of years, show, as has been pointed out in a recent paper by Carr (American Journal of Pharmacy, December, 1913), that cultivated plants of balladonna contain a little more alkaloid than do the wild plants. "The percentage of alkaloid found in the leaves and stem of dried wild plants was 0.49, while the average of that found in cultivated plants during the eight years from 1906 to 1913 was 0.57. As other investigators have usually recorded about 0.45 in the wild plant it may be assumed that the plant employed was satisfactory. It therefore follows that the effect of cultivation has been beneficial." The investigations of Sievers also point to a similar conclusion. Sievers has also shown that the percent of alkaloids in the leaves of different cultivated plants is exceedingly large, and that plants high

in alkaloids will continue to breed plants high in alkaloids, so that by mere selection a better commercial article may be produced. While Carr states that nitrogenous manures tend to lower the percentage of alkaloids, and Sievers states that it is difficult to determine the influence of soil and climate on the development of alkaloids, Miller reports (American Journal of Pharmacy, July, 1913) having grown belladonna plants with commercial acid phosphate and that the yield of alkaloids is as high as 0.9 percent. Miller (loc. cit.) has obtained similar results in his comparative experiments with wild and cultivated plants of Datura stramonium.

Coming to the question of the cultivation of digitalis, we have some very interesting results. Hale, for instance, showed that cultivated digitalis leaves yield a much higher potency than those obtained from wild grown plants, and yet he concludes that it is doubtful whether the fact that they were cultivated had anything to do with the high activity. (Hygienic Laboratory Bulletin No. 74, p. 28.) One of the most valuable facts brought out in connection with his investigations is that the leaves of one-year-old plants seem to have as great toxicity as those of the two-year-old plants. Hale distinctly states later (Proceedings A. Ph. A., 1910, p. 928), that "first-year leaves are not necessarily weaker than second-year leaves and might be used in preparing assayed digitalis preparations." This means that one does not have to wait for two years before securing a crop, and that practically he can obtain twice the quantity during the same period. Although there are published records of experiments which show that when aconite is cultivated it contains less alkaloids, yet Schweizinger (Pharm. Ztg., 1891, p. 608) has demonstrated that cultivated plants are equally and even more toxic than wild plants.

There may be some instances during this experimental stage which might seem to indicate that certain external conditions, such as climate as well as soil, have a very great influence in the growing of plants of exceptional value. For example, in the case of American-grown cannabis, Eckler and Miller have shown that repeated plantings from carefully selected plants of American and Indian cannabis have failed to yield, when in cultivation near Indianapolis, a product testing over 65 percent of the active value of good Indian-grown drug and that the majority of the plants tested 50 percent and even less. Experiments conducted in Somerville, N. C., by the U. S. Department of Agriculture have shown that in that locality a drug of a somewhat higher degree of potency can be grown, although not quite equal to the plant grown in India. Of course it is well known that the hemp plant is grown extensively for fiber in Kentucky and other parts of the middle West. This may be due in large part to the fact that it requires a limestone soil and in practice the most favorable results are obtained where there is an underlying bed of blue limestone. (Yearbook, U. S. Department of Agriculture, 1895.) Sufficient has been said to show that success will attend the cultivation of medicinal plants, and indeed by a priori reasoning on the basis of other agricultural efforts we would expect that medicinal plants could be grown with the same certainty of increasing the yields of any particular constituent or quality that might be desired. Indeed, the history of the sugar beet industry has been duplicated in the work on cinchona, and the same thing can be said with regard to any other plant that man desires to conserve and cultivate.

It will require some years before we can say anything definite about the conditions necessary for the successful cultivation of the many plants that have scarcely been known outside of their native haunts. There are no insurmountable obstacles in this work and there are no intricate processes to be solved before success results. There are merely a few underlying principles that must be adhered to and by persistent effort and with a full understanding of market conditions, success must crown the efforts of any one who undertakes this work. What has been done in the selection of fruits and vegetables can be equally well accomplished with drugs with the proper incentive.

Some Steps of Progress in the United States.—We can scarcely appreciate that while the development of medicinal plant culture has been an exceedingly slow one, yet as a matter of fact, by reason of some of the products being more extensively used in other industries as in the case of hops, it is one of the oldest agricultural industries in the United States. The history of the cultivation of hops is very similar to the experiences recorded with other medicinal plants. For instance, hops were grown in Virginia and in Vermont and Massachusetts. In the former the quality was poor and in the latter the results were very successful. By virtue of the success obtained in the New England states it was in the early part of the last century introduced into New York State and later spread into some of the middle states as Michigan, Wisconsin, Indiana, and Ohio. Since that time the cultivation has been extended to some of the states on the Pacific coast, notably in Oregon, Washington, and northern California.

In the cultivation of peppermint we find a similar history. The industry was first developed in Wayne county, New York. Later it spread into Michigan, Ohio, and some of the southern states and by reason of the more favorable climate and soil conditions in Michigan the industry here has outstripped that of even New York State, being practically abandoned in Ohio and the other states.

The men connected with the Division of Botany of the U. S. Department of Agriculture have always manifested a keen interest in the possibilities of the cultivation of medicinal plants and have done what they could to encourage interest in this subject and the records show that they have supplied information as it might be needed by those disposed to take up the work in a practical manner. The development of the tea industry in North Carolina is one of the most creditable pieces of work of the National Government. Bulletin No. 234 of the Bureau of Plant Industry, on the "Cultivation and Manufacture of Tea in the United States," by George F. Mitchell, should serve as an inspiration to any one contemplating drug culture. If a plant of this kind can be grown successfully here and the technique of manufacture developed to such an extent that the cultivation at Pinehurst, North Carolina, has become remunerative, there is no reason but that within reasonable limits nearly every plant except the strictly tropical ones can be successfully grown in the United States.

Without doubt, the camphor industry will become successful in some of the southern states. Nearly fifty years ago when the price of camphor was very high, the government started some experiments in Florida in the growing of camphor. These experiments were subsequently abandoned as there was hardly any likelihood of any one being interested in this commercially, on account of the low price of camphor. During the past few years, however, interest in this

culture has been revived in Florida and southern Georgia by reason of the fact that frosts destroyed the citrus fruits and the land owners began a search for other possible crops which would not be so injured. Circular No. 12, Division of Botany, U. S. Department of Agriculture, shows just what can be done for the successful cultivation of this tree in the southern states, and some recent experiments of the Government show that by utilization of leaves and twigs there are great possibilities in the economical manufacture of camphor in the United States in spite of the high price of labor.

Owing to the fact that essential oils are used in such large quantities it is quite likely that the cultivation of many of these plants may be made successful, providing at the same time that suitable apparatus for their distillation is also installed upon the farms. The article in the Yearbook of the U. S. Department of Agriculture for 1898, by E. S. Steel, on "Can Perfumery Farming Succeed in the United States?" is deserving of careful perusal by those contemplating taking up any serious work in drug culture.

By reason of the fact that the cultivation of chicory is a permanent agricultural industry in nearly all of the countries having a temperate climate in Europe, experiments have been conducted in the United States in a small way and these have led to the conclusion that it may be successfully cultivated in those states where the sugar beet industry has flourished. The results of this work in the United States were published in Bulletin No. 19, Division of Botany, U. S. Department of Agriculture, entitled "Chicory Growing as an Addition to the Resources of the American Farmer," by Maurice G. Kains. I have elsewhere enumerated the plants which may be successfully cultivated and have indicated in a general way how either plants or seeds may be obtained. (Kræmer's Textbook of Botany and Pharmacognosy, pp. 403-416.)

Summary.—The following is a summary of the principal points which I have attempted to bring out in this article:

1. That there has been very great progress made in the practical cultivation of medicinal plants in the United States during the past five years.

2. That our interest in the subject should not be merely by reason of scarcity of drug supplies, but for a more important reason, viz., that uniform products may be produced.

3. That this uniformity in crude drugs and their products is a principle that should be practically attainable and is fundamental in the development of modern pharmacognosy, pharmacology and therapeutics.

4. That the experiments in the cultivation of medicinal plants which have been conducted in the United States have given us certain information that can be generalized and applied to plants other than those already experimented with.

5. That the following points might be held in mind by those who desire to take up the cultivation of medicinal plants.

In the first place he ought to determine whether there is a market for any drug under consideration, and this can only be obtained by personal inquiry and investigation, as not even any of the government publications show this.

In the next place, if one is satisfied that it is worth while to take up the cultivation of any particular plant, then its geographical range should be studied, both as to where it is indigenous and where it has become naturalized.

The literature should be gone over not only for facts regarding the cultivation and distribution of the particular plant in view but also of some of the related plants.

At the same time that these preliminary studies are made, a careful survey should be taken of the plants which are indigenous and in cultivation in the particular locality where one is proposing to locate the farm.

Then, of course, everything should be done on a small scale at first. If there is no information available then he must, on the basis of the general principles laid down for the cultivation of medicinal plants, proceed with their culture, conducting parallel experiments with propagation by both seeds and cuttings.

When the crop is harvested he must by analytical and other means satisfy himself as to the value of his product compared with the commercial article, and with these facts in hand submit specimens and request quotations from the dealer in crude drugs and from the wholesale druggist. On this basis he will arrange for all future crops with some certainty as to their market value. Experience has shown that cultivated crops command a higher price than the drugs obtained from wild plants even though their superiority cannot always be demonstrated by analytical means. For instance, no one is trying to determine by an analytical process whether any given lot of tobacco, tea, or coffee is of superior value, and yet the competent dealer and the discriminating public even recognize the qualities of the grades that are offered. This is even more marked with the products that have been derived thus far from cultivated medicinal plants and are appreciated by some pharmacists and physicians.

WINDOW DRESSING.*

IRA B. CLARK.

It would seem, in looking at the drug store windows of our fair city, that most of them could not be used for any other purpose than the admission of light and as a repository for various kinds of drug store junk that could not find a resting place in any other part of the store. In some of them, we see nothing but accumulated dust and flies, with a few sunburned packages of some patent medicine, or a set-up display of one of the numerous products of the tobacco trust, which is allowed to remain in the window week after week, and in still others, nothing at all.

To the majority of druggists, dressing a window is a big bugaboo with long horns and you frequently hear such expressions as this: "I know nothing about dressing a window" or, "It takes an artist to make a good window display," or "It takes too much time." Now I insist that no special artistic ability is required to arrange a window display that will pull trade right into your store. What is needed, however, is sufficient energy to do the work, a little application of gray matter, and judgment in the selection of seasonable and profitable articles of merchandise. The time required to do the work will be well and profitably spent.

*Read before the Nashville Branch, Dec. 11, 1913.

In order to dress a trade pulling window, it is necessary of course, to select a seasonable article. Cough remedies do not sell well in July, neither will a perspiration killer have much sale in zero weather. No matter how much publicity may be given these worthy preparations, they will not sell out of season. As previously stated, the application of some thought is necessary in arranging a window and it is essential to begin planning your window a week or longer, beforehand, in order to get all the details worked out, and when the times comes for placing the display it will be found to be comparatively easy work.

In beginning your display, cover the floor of the window with some material, crepe paper is generally very acceptable, that will either harmonize in color or be in sharp contrast with the general color of the article to be displayed; that is, do not use a combination of red and yellow, or brown and blue and so on. Colors that will produce a harmonious blending are red and green, or blue and white, or orange and black, etc. Begin at the front of the window with arrangement of display and elevate toward the back. The elevation being dependent on the depth and length of window. Be careful not to leave any wide openings or breaks in the display, to convey the impression that something had been taken out or had been omitted.

In order to make a pleasing display of merchandise, it is necessary to have the arrangement well balanced; that is, do not have one side high and the other low. If you build a pyramid on one side of the window, be certain to make a counterpart on the other side.

It is not always necessary to have a large stock of goods to make a creditable display. A very attractive window may be made by covering a number of small boxes with the same material that is used in covering the window floor and arranging them in steps, pyramids or otherwise, and placing on them the articles to be displayed, and a very harmonious effect is produced. I have seen a very attractive window with only a twelfth of a dozen of the exploited article in the display. This and a price card, with a small amount of text matter, constituted the trim.

While a large stock is not necessary for window display, it is often desirable to make as much on display as possible, in order to impress the buying public that you sell the article in no small quantities. For the past several years, the writer has been putting up a chapped hands lotion, which has been exploited to the public through the medium of package inserts and window displays. Recently, during the present season, a display of two gross was placed in the window and during the week we had a sale of forty-eight bottles of the preparation. While this article has some general sale in a general way, over my own counter, the demand is always stimulated by a window display and one of the windows is given over to this article about every four weeks during the season.

A window may be well arranged and prove attractive, but from a merchandising standpoint it is incomplete without a price card or cards; without the price being made known, the story is only half told. Your display may impel the prospective purchaser up to the buying point, but he or she, not knowing the price will come to a dead stand still and the sale is lost. The importance and value of a price card in connection with a window display was impressed on the mind of the writer several years ago and before rubber goods had advanced to the

present high prices, when we had a window, consisting of one dozen fountain syringes and a card with this legend, "$1.00, Guaranteed for one year." A lady, who was not a regular customer of the store and lived eleven blocks away, ordered, by phone, one of the syringes we had in the window, saying she had seen it in passing on the street car.

The value of the drug store window as an advertising medium should be so self evident that no argument is needed, but as remarked at the outset, this valuable asset is not made use of by the majority of druggists as it should be. There is no drug store so small, or its location so isolated, but what would be benefited by a systematic use of the windows for displaying merchandise. Prospective buyers of your wares are constantly passing your store in greater or smaller numbers and any one of this number may be made a permanent customer by an appeal through a window display. It is a generally conceded fact, that, getting the customer across the door sill is half the battle. If your store service is of the proper kind and stock well kept, you can then call this customer your own.

It is important, and I may say necessary, that window advertising, to be effective, must be changed regularly and frequently the same as any other form of publicity. Again I hear the pharmacist say, "That will take too much time and be a great deal of trouble." But this is not true, after the start is once made. Have a stated time for changing the windows and do not let any thing interfere with this arrangement, except sickness or death. A display should not remain in the window a great length of time, I would say, not longer than a week, as after that time it begins to grow stale and loses its power to draw trade. I repeat, the windows must be changed regularly and frequently, and if a specified time is set aside for this work, it will prove a pleasure and be as easy of accomplishment as any other store routine.

What is the best class of merchandise to display in the windows must be determined by conditions and the location of the store. The present day drug store carries such a variety of stock that no difficulty should be experienced in selecting something every week for a window display. Frequent changes could be made from a list something like this: Toilet goods of a general character, a combination of tooth brushes, powder and paste, own make preparations. Olive oil has recently become a staple drug store seller, make an occasional display of this; stationery is a profitable side line and an effective window may be made with box paper. Rubber goods, such as hot water bags and fountain syringes can be arrranged in an attractive manner and is sure to bring dollars into the cash register; cotton, gauzes, bandages and surgical dressings could be used frequently and with good returns. A window that invariably excites interest and comment is made with old prescription files, and utensils used in prescription work; a percolator in operation adds interest to the display.

It is rarely ever good policy to make a display of patent medicines as they are unprofitable and may be bought at any drug store and at some places that are not drug stores. If you must display patent medicines, make the proprietor pay you for the space and make him pay you well for it.

Never use in your window but one kind of goods or goods of an allied character as a conglomerate of stuff stacked in the window will not make a very deep impression on the minds of the passers by.

We are frequently urged by the proprietors of nationally advertised goods to "connect up" with their advertising and reap the benefits from their publicity campaign. The advertising man is a wily individual and knows the value of your windows, but it is not good policy to use your window space for the exploitation of merchandise that does not pay a good profit and may be procured any place. However, this matter should be treated with some discretion. The store with a considerable transient trade, may with advantage, give valuable space to "nationally advertised" goods, but the neighborhood store had better stick to the profit makers. Persistent publicity in his small world will be to the advantage of the retailer in the same ratio that it is to the big fellow in a wider field.

A word again on the regularity of changes of display. By frequent and regular changes in the window, the public will learn to look for something new in your window and will respond liberally, in the exchange of their dollars for your wares. The effect of publicity through the show window is, in most instances, immediate. The desire of the buying public is aroused to the purchasing point by an attractive window and it is then a simple matter to step in the store and complete the trade. Then too, the effect of window advertising is cumulative. It has been the frequent experience of the writer to have demand for some article the customer describing it, by saying they had "seen it in the window week before last."

In conclusion, I would advise every druggist to form the window display habit. It is both interesting and profitable, and don't forget the price card with a brief descriptive text.

PHARMACEUTICAL ADVERTISING.*

JEROME A. WILKERSON, ST. LOUIS.

What a vast subject and how little appreciated by my colleagues in the profession! I have talked to quite a few pharmacists on this subject, with the same expressions—that I was crazy, it was a losing game, it didn't pay, or it was unethical.

Just as we would be seriously handicapped by resorting to the sail boat in the days of high powered steam vessels, so too is the merchant who prefers sail-boat methods seriously handicapped in his business voyage on the high sea of commerce.

I shall endeavor to convince you as best I can in the limited time, the essential value of advertising, not advertising in general but in particular; advertising in the pharmaceutical world, and will start by taking the more common pessimistic remarks against it.

The most common is, "It doesn't pay." Right here I want to emphatically state that it does pay. But that the results cannot always be determined directly be-

*Read before the Saint Louis Branch, November 22, 1913.

cause the indirect returns are speculative and sometimes more effective than the direct ones. Let me illustrate.

Suppose you sell a certain cough syrup that the manufactureres advertise extensively and for which you pay from both ends of the game; 1st, because you pay a long price 2-4 and 8 for the article, which is made so cheaply that regardless of their heavy expenses, the manufacturers make thousands of dollars on it each year; 2nd, being a popular article, it is most likely to be sold at a cut price. Some one will try to convey the impression he sells for less than you, and consequently you rebate the customer off the prescribed price.

Now if you will manufacture and advertise your own preparation and charge the cost of advertising upon the cost of production, your own article will still cost you less and sell for more, as you can govern the price. The impression conveyed that you are capable of formulating medicines, will indirectly sell your hair tonics, cold creams and other goods of your own manufacture. The trouble is that the average druggist thinks that if he advertises he must follow out the expensive way employed by the larger manufacturer, which is entirely wrong. A cough syrup of your own make need not be advertised on bill boards or newspapers. A more effective way for you will be to use counter inserts, stickers, rubber stamp, or program advertising. You will be surprised at the results.

To illustrate this. During a certain month last year we sold a gross increase of cough syrup which cost us to manufacture 94 cents a dozen or $11.28 per gross, plus $2.00 for counter inserts (which we know were the direct cause of the increased sales, and we never will be able to estimate the indirect results), making a total cost of $13.28 a gross, which retailed for $36.00 leaving a profit of $22.72. The possible sale of an advertised brand which would have cost $24.00 less 5 percent or $22.80 net and retailed for $33.12 at 23 cents per bottle, would leave a gross profit of $10.32. The difference between the two being $12.40 or over 100 percent better profit for your own product. It is profit and not sales that count.

Well, I think I have showed you how it paid in one particular way and here is another.

Granting, which is most essential, that your preparation has virtue, it is bound to create friends, who will recommend others to your store and who will send miles to get it if they move from your neighborhood; and once you have them as a friend you enjoy the advantage of restricted sale and the profit on their possible other purchases.

You might state here, that you are not convinced of any advantage, because if you had sold the same preparation over the counter by recommendation, the result would be the same. True, but you cannot reach everybody who wants a cough syrup at the particular time he needs it; he might live next door to your competitor and yet be reminded by your advertisement that you have a special cough remedy and go blocks to give it a trial.

The next common argument, is that it is unethical. It is not any more unethical to advertise and to sell your own article than it is to sell an article nationally advertised. The only point of ethics is to know what and how to advertise. Advertise and push articles that do not conflict with any physician's practice. Advertise your cough syrup, cold creams, lotions, hair tonics, liniments.

tooth preparations, plasters, bird seed, corn remedies, toothache drops and cathartics.—Do not advertise that which might conflcit with the practice of a physician or that which will encourage "self medication," which is oftimes dangerous, as for instance, kidney and stomach remedies, nervines, female tonics, and many others with equally disastrous effects.

With these suggestions as to "What to advertise," let me show you "How" and to "whom to advertise."

It is necessary in order to become a successful advertiser, to not only advertise a preparation or a line of preparations to the buying public, but you should at the same time popularize your store, calling attention to some special way you have of doing things or of your efficiency and accuracy.

You might cater to the prescription end and state your advantages, such as the fact that you are a graduate of a recognized college of pharmacy, a member of various pharmaceutical associations, and that you have a well earned standing among your physicians for honesty and efficiency; that your prices are as low as any—quality considered. You might also advertise your soda fountain specials, your cigar department, your line of toilet goods and kodaks.

It seems a pity that so many druggists neglect the advantages offered in advertising to control their own territories. When a man opens up a big down-town kodak store, his overhead and advertising expenses are enormous, yet he meets these and still makes a profit. He draws your customers and those of other localities to constitute a volume of business. He popularizes his store. He has no inducements to offer better than yours. Yet he invariably succeeds without the valuable asset of personality.

People living in your locality, would rather buy of you where they are known and free to ask questions. There is nothing nicer than to trade where they are known, provided you win their confidence, have a fresh stock, low prices and the ability to supply them.

I often have been told that, all things being equal, they would rather purchase this class of goods from us, where they are known and have some recourse in event anything goes wrong, than to buy at a strange place. Hence the most valuable asset a local druggist has is his personality.

Do not lose sight of the fact that you have a professional end which can be helped by advertising. Besides reminding the public of your prescription department, cultivate the good will of your physicians and nurses by supplying them with goods at a discount, whether the physician be a prescriber or dispenser. Don't ever discriminate. If the doctor is a prescriber he might enjoy a closer friendship than the dispenser, which has some advantages. If he be a dispenser, cultivate his good will and business and make a booster for your store which will bring indirect results. By cultivating his business you can make a small profit on biologics, cottons, etc., on a wholesale basis, which will increase your buying capacity and help you to enjoy the discounts from the manufacturer. Effective ways of advertising to your physician I shall treat of a little later on.

The various methods of advertising any particular article or item will best suggest themselves after you have studied the requirements of your immediate neighborhood.

Counter inserts give the best results on the advertising of any particular article, going right into the hands of the customer. A catchy short explanation of the article, its uses, etc., set up with a prominent display of the name of the article and the price, is all that is necessary. Do not go into details in an advertisement, because it will not be read and very likely on account of the congested appearance of the type, will not be glanced at a second time, but thrown away.

Another valuable method, which most druggists look on with scorn is program advertising. If carefully handled it is bound to prove effective. The reason some druggists never get results from this form of advertising is their own fault. To fill in a space on a program with the words "John Doe—Druggist, Prescriptions a Specialty," is just wasting money, unless you want those interested in the program to know that you have donated, and "Let me alone." It would be just as well to have inserted "This space paid for," for all the effect it has.

The way to get all that is coming from this class of advertising is to advertise one particular article and make it strong. This is especially advantageous in the holiday season. If you plug away on one particular item you are bound to get either direct or indirect results.

To test the effectiveness of program advertising, I ran a 10 cent rebate coupon on a 25 cent box of face powder that cost $1 a dozen with the results of a sale of 65 boxes @ 15 cents each cash, or $9.75. Deducting $5.50 the cost of the powder and $2.00 the cost of advertisement, I made a net profit of $2.25 on the powder and an indirect result of an increase of business on other articles.

The rubber stamp and the sticker have little if any value. They have always appealed to me as a half-hearted attempt at advertising unless applied on a 'limited time special.'

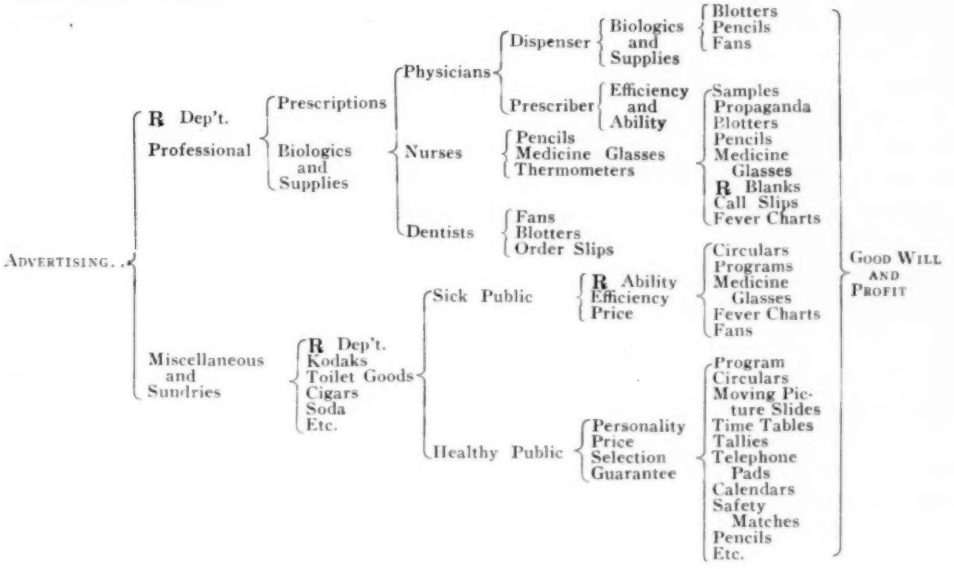
Circular advertising is very effective but a little more expensive than other advertising. It is to the local druggist what the newspaper is to a downtown man, and should never be overlooked if you are in the game. Euchre and bridge tallies having printed on them your advertisement of a special cream or cosmetic and given to private or public euchres are good advertising; also telephone pads, calendars, safety matches and owl car time tables.

The foregoing are all used to advertise to the public. Your physician and your dentist must not be overlooked if you desire to increase your professional end. This is easily accomplished by supplying them with pencils with your business advertisement on them.

Blotters may be given from time to time suggesting the use of U. S. P. and N. F. preparations, with their formulas and therapeutic value printed on one side, which is in itself propaganda work. You might also supply your physicians with prescription blanks, fever charts, and medicine glasses, and the dentists with tooth paste, order slips and palm leaf fans with your imprint thereon for their offices in warm weather.

You can hardly appreciate how this helps. Even though a physician sends you some of his prescriptions, these "live wire" advances will arouse him from a neutral state and make him an enthusiastic booster for your store, so much so, that he will insist that his prescriptions be filled by you.

This chart gives you an outline of what to advertise, to whom to advertise, and through what channel.



In conclusion I would say that these things take time and nursing. You must not look for large returns immediately, but if patiently followed out the remuneration will be worth your while. The longer you follow up advertising the less you will seem to know about it, because things and methods change so rapidly with the introduction of newer and novel ideas. But the game is fascinating and the longer you work the more you will like the work. It may appear deep and intricate at first, but it really is very simple. Master the fundamental rules and you will be as proficient as anybody. My advice is to start now.

"CONSERVATION IN RELATION TO PHARMACEUTICAL CHEMISTRY."*

H. C. FULLER, THE INSTITUTE OF INDUSTRIAL RESEARCH, WASHINGTON, D. C.

The conservation question has been before the public to such a large extent during the past few years that in some ways I hesitate to make any remarks on what might be considered a hackneyed subject; but it has an important relation to our particular branch of science, and economic conditions at the present time certainly demand conservation in this field, so it seems important enough to give the subject some slight consideration.

It would not be possible in a few paragraphs to consider the application of this subject to all of the different branches of pharmaceutical chemistry, and I am only going to touch on four of the important points which have come to my

*Read before the Washington Branch, December 17, 1913.

special attention during the past few years, and especially during the two years that I have been connected with the economic side of the work.

The four points that I want to talk about are those relating, first, to the manufacturer; second, to the retail druggist; third, to official control; and fourth, to fakes.

A sort time ago there was placed on my desk a package of considerable bulk which, on opening, I found to consist of 142 monographs, mostly reprints of magazine articles but all the work of a number of scientists connected with one particular laboratory and all relating to pharmaceutical chemistry in its highest scientific sense. They were all articles on research problems, and in most cases went to the very root of the question under consideration. The laboratory which was responsible for this work is under the protection of the British Empire, and the firm itself is a manufacturing house which has had wonderful success in its business and is now invading the American market to a degree which is appalling. This mass of research matter gave me considerable food for reflection, and I sat down and looked over the indices of some of the abstract journals to see what we in America had contributed, in a scientific way, to pharmaceutical chemistry during the same period. While in the whole we have done a good deal, with the exception of the work done by our own Bureau of Chemistry here in Washington and by the American Medical Association in Chicago, very little of what might be called real scientific research has been done by the profession at large. We all know that some of the larger manufacturing houses do maintain laboratories which, they claim, are devoted to experimental work and, supposedly, to advance research. In one case I know that such a laboratory has been run for at least a decade and that the picture of the building is used for advertising purposes. However, the amount of real valuable work that has been turned out by this laboratory, at least so far as has been made available to the science at large, would occupy but a few inches of index space during all that period.

It is not my purpose to intimate that the entire success of this foreign firm is due to research, but it is very evident from a study of their products and from the fact that their value has been positively ascertained, both by practical and chemical investigation, that at least part of their success is due to their ability to get at the bottom of things. The American manufacurer has certainly wasted a great deal of time and energy in making up products whose chemical and therapeutic value were uncertain, and in many instances absolutely unknown, and has relied on the medical profession to get results from which he could make advertising. We have this forcibly brought to our attention by the vast number of digestive products that have been exploited and which, on investigation, are found to be either inert or of so little therapeutic value as to be unworthy of consideration by the medical profession or by the laity, who actually consume them. We have seen how manufacturers would put out preparations claiming to possess the virtues of cod liver oil and extol the value of the alkaloids present in the original material, when, as a matter of fact, we know that the true value of cod liver oil has nothing to do with the alkaloids;and these substances are indicative of putrefaction in the livers before expression and are really a sign of impurity. They are ordinary, common amines which can be made from any liver—dog, cat, or most any refuse from the slaughter houses. We see hundreds

of preparations on the market, with fancy names, which are made up of products containing so-called resinous principles with unknown glucosides which, if investigated—as was done by the firm above mentioned—would be shown to consist of nothing extraordinary and probably nothing of any value. It can safely be stated that as soon as the manufacturers fully wake up to the idea of careful research, it will be possible to write a very interesting mythology in pharmaceutical chemistry and to relegate hundreds of products of supposed value, to the waste heap, and it will be possible for these same manufacturers to save their shelves and the shelves of the retail druggist from an immense accumulation of worthless material.

The point I wish to make is that the manufacturers could well determine the actual value of their products from a chemical and an unbiased therapeutic standpoint before they put them on the market, thereby saving themselves great expense in maintaining a supply of useless crude material, in making up valueless pharmaceutical products and overlooking space which might be used to good advantage with meritorious articles.

Some of our manufacturers, especially those who have not been in a position to retain on their staff a fully qualified pharmaceutical chemist, are taking steps to have their manufacturing processes examined, criticised and improvements suggested; and what is of special merit, also are learning how to analyze their products so that when they claim on the label that it contains a definite quantity of a certain ingredient, regardless or not as to whether it is an inhibited drug, the amount that they claim on the label will actually be found there. It is well known that methods of assaying complex mixtures are very few and many of them can be worked out only after a considerable amount of experimentation, but with time and thought there are probably only a few such problems which could not be solved. A full realization of this question would have saved hundreds of manufacturers from prosecution under state and national and local drug laws, and at the same time have saved them untold expense.

The American Medical Association, though it has been greatly criticised by some of the maufacturers, has done an immense amount of very meritorious work, and it is to be hoped that in their laboratory, in Chicago, they will continue to carry out their present policy. The American manufacturer or associations of manufacturers could do nothing more to their advantage than to thoroughly cooperate with the work that is being done in the laboratory of the American Medical Association; not necessarily to adopt their suggestions, but to check up their work and to adopt it where it is shown that the American Medical Association is right in their conclusions as to the value of a particular preparation and to show wherein they may be wrong in case the manufacturers' laboratory obtains different results. By this means, progress looking to the final evolution of meritorious and perfect-keeping products, would be much more rapid.

Coming to the retail druggist, there are two points which I think ought to be emphasized in the begining and which, I believe, will be agreed to by all of us present. In the first place, the retail druggist is not primarily a storekeeper or simply a vendor of supplies. His place in the world of pharmacy can be obtained only by a scientific study, and he is not allowed to enter into his profession until he has passed certain examinations and fulfilled certain requirements satisfactory

to the community wherein he desires to establish himself. This should make him vitally interested in what he sells, both as regards the efficiency of the same as a medicine and as to its keeping qualities and activity as a drug. Also, on account of the vast amount of legislation which is going on at the present time, he is obliged to keep up, to a greater or less extent, in analytical chemistry.

The retail druggist is obliged to stock his shelves with a great variety of substances, preparations and mixtures, and in some stores this supply will probably reach into the thousands. These things come to him from manufacturing pharmacists, patent medicine makers, manufacturing chemists pure and simple, and those who deal in specialties—to say nothing of the numerous preparations which are not strictly drugs or medicines. Oftentimes the druggist has to invest a relatively large outlay in some one thing for which he has but few calls, and sometimes these calls only come at the interval when a manufacturer is carrying on a detail in that vicinity. He also is obliged to stock his shelves with a vast amount of material which is absolutely useless; some of the things being of high cost. At the present time there is a great run on peroxide creams, antiseptic soaps, throat lozenges claiming to have active formaldehyde, and others. A great majority of these things are absolutely useless. There is no peroxide cream made which contains any detectable peroxide; and the value of antiseptic soaps is mostly in the label and not in the body of the substance in question. However, the druggist is obliged to carry all these articles and many others of analogous properties, and hence he becomes merely a storekeeper.

It seems as if the American Pharmaceutical Association could do the trade a great deal of good by establishing a central laboratory, where products could be carefully checked up, and, where they are of no value or of doubtful value, a full exposure could be made and sent to all the members of the Association so that they need not stock their shelves with these useless articles. Furthermore, this laboratory would be in a position to advise its members as to the true relative merits of the lines carried by the different manufacturers, and thereby enable the druggist to talk intelligently to the physicians who are his patrons, as well as to the lay patron. Again, such an institution would have an opportunity to work out methods of analysis which are of special importance to the retail druggist—simple methods, if possible, whereby he could quickly check up some of the things he makes, such as tincture of iodine, spirit of camphor, paregoric, etc.—all of which must contain a definite quantity of the active ingredient and which, if wrong, are likely to subject him to unpleasant prosecution and notoriety.

The retail druggists ought to spend some time in studying the question of cost, and, wherever possible, suggest to manufacturers the conservation of raw materials in order that the substances which they use to a considerable extent can be obtained at a better price. For instance, probably not one retail druggist in a thousand knows that the chocolate manufacturers in this country have for years thrown away by-products which contain valuable ingredients amounting to from fifty to one hundred and fifty dollars a ton; ingredients which are used to a great extent by the members of this profession and which would probably have a larger use if they could be obtained at a more reasonable figure.

Again, the woolen manufacturers have for years thrown into the rivers, or sold something little better than sludge for leather makers, a grease which can be

worked up into the finest grades of lanolin, equalling and surpassing in quality that which is imported from Europe. A laboratory such as I have mentioned above would be in a position to take up such questions and impress upon the manufacturer the advisability of working up these goods for the American market.

There are many other points which such an institution could do to assist the retailer and which would undoubtedly make the Association a much stronger body than it is at present, by bringing in a larger membership. But I have not time at the present moment to go into all the features.

Coming now to conservation in connection with official control, I want to say a few words regarding the matter of rules, regulations and laws which are being enacted and which affect our particular work.

The Food & Drugs Act has proven to be one of the most interesting and valuable pieces of legislation that has been enacted in this country for a long time, and it is being copied to a large extent by the different states. As a whole, it has worked quite well; and certain features which have allowed technical violations, have been corrected or an attempt is being made to correct them. Before advocating new legislation or radically modifying this law or any other, those who have the matter in charge ought to be absolutely certain that the results sought can be obtained and are really going to be of benefit. I say this because, as it is now, the people who are engaged in the selling of pharmaceutical products come in contact with national, state and local laws; and a study of the requirements in vogue at any particular time is quite a problem, in order that goods may be honestly labeled, and the uncertainties of new legislation and the consequent changing of labeling, if anything new is enacted, requires constant alertness at great additional expense. Now, it is well known that the final burden of all these added expenses comes on the ultimate consumer, and the vast amount of legislation that has been enacted and enforced during recent years has been a great factor in the increased cost of living, both in relation to foods and medicines. I think it can be said truthfully that if the Federal Food & Drugs Act were strictly interpreted and enforced in the District of Columbia, it would drive every small retailer out of business within five years. This may seem a radical statement, but, with his multifarious stock he cannot keep it always up to standard, and if rigidly inspected it would not be long before he would be caught twice for the same offense which, as we know, carries a jail sentence, and even though the man may have been perfectly honest in his desire to keep his products up to standard, we know what the experience has been in the past. The courts pay very little attention to this in many cases. It seems as if control officials should endeavor to help instead of to persecute the retailer. Those who are doing an underhand business will soon be discovered and the energy of enforcement can be visited on them and the honest dealer made to feel that he can conduct his business without constant fear of prosecution.

Going back to the Food and Drugs Act, a short time ago an attempt was made to enact an amendment requiring the declaration of about every individual drug in the Pharmacopœia. There may have been some reasons for this, but before such legislation is enacted or attempted, its real necessity ought to be ascertained. It would appear to me from a study of this particular feature of drug legislation, that we require the declaration of too many drugs now. The primary object of

this declaration is to let people know what they are getting and to let them know if they are buying an habit-producing drug. Every one knows about opium, cocaine, and chloroform; and a large majority probably know something about acetanilide, but probably not one in one thousand ever heard of eucaine, and alpha eucain is not sold in the United States. Probably not one laymen in five thousand every heard of cannabis indica, and it is doubtful if the Hashish habit will ever be in vogue in this country. However, if there is danger of such a contingency, to be consistent we should make provision for the chewing of areca nuts and the eating of mescale buttons. Furthermore, cannabis indica cannot be determined, and the declaration of it is of small value because the amount stated cannot be checked. Alcohol in medicine is not taken for its medicinal effect. If one wanted alcohol for this purpose he would buy whiskey, or some of the straight grain alcohol. "Medicated boozes" can no longer be sold except under a revenue license, which brings them into the same class as whiskey, and under the category of beverages on which no declaration is necessary. Personally, I cannot see the logic or the necessity requiring a declaration of alcohol, and such declaration requires a vast waste of time, energy and material all over the country in assaying the batches of products containing it. Hence, the burden of declaring a lot of other things on labels, the checking up of the analysis and other useless procedures connected therewith, ought not to be imposed on the members of our profession.

At the last meeting I listened to a discussion regarding the declaration of sales of coca and cocaine, required by the Treasury Department. It was apparent that the most of the members present thought that such a declaration carried the goods down to the ultimate consumer, or practically to that end. I think, myself, that the matter was taken too seriously and that it will not be taken seriously by the trade as a whole, for, to check up such a proceeding would require nearly as much work as checking up the returns under the income tax; and as there is no appropriation for carrying it out and no penalty attached for not complying with it, and as there is not room in the Bureau of Chemistry for a force of clerks to check up and interpret the returns from the thousands and thousands of retail druggists, doctors and other people who handle from a grain to 2 or 3 ounces of coca leaves a year, it seems more like a tempest in a tea-pot. However, such a regulation comes under the present discussion because it adds one more piece of work to the already over-burdened druggist and dealer, who is beset with much unnecessary regulation already. If such regulations and orders become obnoxious, it is but a simple matter to remedy them, and the course is open to anyone affected, though many may hesitate to take such steps. Nothing should be construed in the statements which have just been made, which would appear to be antagonistic to well merited legislation, but it seems from a study of what we have at the present time, that we could dispense with a good deal of what we have now.

Before closing I want to say one or two words on the subject of fakes, and suggest what could be done by the pharmaceutical chemist to do away with this evil. The American Medical Association, and, spasmodically, some of the Journals, have exposed a number of fake products which have been foisted on the American public to the extent of many millions of dollars. The work done by

the American Medical Association, unfortunately, does not reach the public generally, except occasionally through some magazine article—and it is only through publicity, and continued publicity, that the sale of these pernicious things can be stopped. The retail druggist himself is not in a position to do this, because he immediately is sued for libel and is not able to defend his case in court. It was thought that the Food and Drugs Act would eliminate this problem to a considerable extent, and it undoubtedly has, but from the number of pernicious and weird things that have come to me for analysis during the past year or two, it would seem that this law is not able to reach all cases. For instance, we have here an article which is sold at the philanthropic price of $25.00 to anyone who wants to prolong his life. It consists of a brass capsule, nickel-plated, filled with red oxide of iron and plaster of Paris, and which is connected with a wire to a plate which is attached to the ankle. The nickel-plated capsule is put in some water—ice water recommended—and the manifestations begin. Sometimes the philanthropic doctor who puts this out, sends a quart of tonic, at the very low price of one dollar, which seems to be a weak pickling liquor from the iron works or something of a very similar nature. Another interesting fraud is this little tablet which is advertised in the highest terms as being valuable for anybody, whether he is sick or well, and which is found, on examination, to consist of sodium tartrate and epsom salts. Another product which is apparently unique, is this liquid. It is recommended as an eye remedy, and is exploited for producing shiney eyes, especially among actresses. On examination it was found to be an essence of pepsin, and the scheme is somewhat unique, though in a way there is a basis for it, as we all know that a bad stomach makes a dull eye. Turning now to some articles for external use, I want to mention this hair remover, which, though not a depilatory, is especially recommended for women. This product seemed to be a paste which is to be warmed, spread on the face, and after cooling and drying, to be removed, taking with it the hair. Investigation proved it to be common rosin, with possibly a little added balsam or something to give it an odor, which, on application, was found to have marked sticking properties. It would unquestionably pull out the hair, but at the same time probably considerable of the epidermis. Another interesting fake which you may all try if you wish, is this wrinkle eradicator, which is sold at a very high price and which can be cut into various shapes and guarantees to do the trick with old and young. As you will note, it is nothing but an ordinary court plaster, sold at an exorbitant figure. It seems to me that all the organizations, manufacturers, retailers, wholesalers and medical bodies should resolve together to stamp out this abuse, and I believe if they would work in unison there certainly would be no fear of prosecution and they could accomplish results which would be beneficial to all. The Drug Trades Conference might consider this suggestion.

Editorial Notes and Announcements

JAMES H. BEAL, Editor.....Scio, O.

All communications for insertion in the JOURNAL, or respecting advertising should be sent to the Editor.

The Association does not accept responsibility for the opinions of contributors. Offensive personalities must be avoided.

Under the rules of the Post Office the JOURNAL can be regularly mailed only to bona-fide paid subscribers. Subscriptions and association dues should be sent to the Treasurer, H. M. Whelpley, 2342 Albion Place, St. Louis, Mo.

Requests for back numbers, and claims for missing numbers should be sent to the Editor.

Claims for missing numbers will not be allowed if sufficient notice has not been given of change of address, and in no case if received later than sixty days from the date of issue.

<>

REPRINTS.

If the request is made at the time copy is submitted, authors will be furnished with not to exceed 50 reprints, without cover, of papers accepted for publication in the JOURNAL.

Larger numbers of reprints will be supplied by the Stoneman Press Co. at the following prices, provided the order is received before the type has been distributed:

100 copies, 4 pages, no cover, $2.50, with cover, $4.50.

200 copies, 4 pages, no cover, $3.00, with cover, $5.50.

50 copies, 8 pages, no cover, $2.75, with cover, $4.50.

100 copies, 8 pages, no cover, $3.50, with cover, $5.00.

200 copies, 8 pages, no cover, $4.50, with cover, $6.50.

50 copies, 12 or 16 pages, no cover, $4.00, with cover, $5.50.

100 copies, 12 or 16 pages, no cover, $5.00, with cover, $6.50.

200 copies, 12 or 16 pages, no cover, $6.50, with cover, $8.00.

Orders for reprints may be sent either to the Editor, or to the Stoneman Press Co. Columbus, Ohio.

GREETING FROM HONORARY PRESIDENT A. B. LYONS.

To the Members of the American Pharmaceutical Association:

I take great pleasure in being able to send you a word of New Year's greeting. It has been very gratifying to me during my severe illness to receive from so many of you words of sympathy and expressions of a hope that my recovery might be speedy and complete.

Complete recovery I suppose that I cannot hope for, but I am happy in present freedom from discomfort, and especially in finding myself increasingly able to resume my wonted activities.

The wholly unlooked-for honor conferred upon me at Nashville, in my absence, calls for grateful acknowledgment. I accept it in the spirit in which it was offered—not as a thing I had a right to claim or expect. I trust that it may be possible for me yet to render to my chosen profession services such as shall justify your confidence.

A. B. LYONS.

<>

THE PRESIDENT ELECT.

As noted in the November issue of the JOURNAL, Mr. Caswell A. Mayo, editor of the *American Druggist*, has been duly elected to preside over the fortunes of the American Pharmaceutical Association during the official year 1914-1915, his official duties beginning with his installation at the 62d annual meeting, which will convene at Detroit, Aug. 24 next.

From an appreciative article by Thomas J. Keenan, who was for many years associated with Mr. Mayo in editorial work, we abstract the following:

"At the annual meeting of the Association in Nashville last August, Mr. Mayo's name and the names of two other pharmacists were placed in nomination by a committee, and after the meeting adjourned these names were submitted by mail to every member of the Association, with a request that the member indicate his preference on a ballot enclosed for the purpose. On October 24, the ballots were counted by the official board of canvassers, when it was ascertained that Mr. Mayo had been elected by a plurality of votes. In accordance with the by-laws of

the Association, the installment takes place at the meeting in Detroit next year.

"Seldom in the balloting for a president of the American Pharmaceutical Association has such an intensity of interest been displayed or has enthusiasm run so high as in the present election. The opposing candidates were men of nation-wide fame and prestige, whose friends spared no effort to

CASWELL A. MAYO, New York,
President-elect, 1914-1915.

improve their chances of election. One has achieved prominence as the editor of a comparative newcomer in the field of drug journalism, and his candidacy was actively championed by a local association of pharmacists; while the other enjoyed an extensive acquaintance among pharmacists throughout the country, and by creditable and long-continued activity in association work generally, had gained many loyal followers and zealous supporters. Both were connected in a teaching capacity with colleges of pharmacy.

"The prospects of Mr. Mayo's success at no time seemed very bright, and it was doubted by many whether the sterling obligations under which he had placed the membership of the American Pharmaceutical Association by indefatigable industry in committee work during the years of his connection with it, would be recognized and acknowledged.

"Mr. Mayo's activity in the affairs of the American Pharmaceutical Association dates from 1892, the year which saw the passing of the lamented Prof. P. Wendover Bedford, though he was well known to some of the members from an earlier period, when he was associate editor of the Druggists Circular. Professor Bedford had been a very influential factor in the upbuilding of the Association, not alone in New York state, but in every part of the country reached by his editorial articles in The Pharmaceutical Record. The work which he was compelled to relinquish by death was taken up by Mr. Mayo, and how well the latter has served the Association, and through it the pharmaceutical profession of the United States, may be read in the pages of the *American Druggist* from the time he assumed the editorship in 1892 down to date.

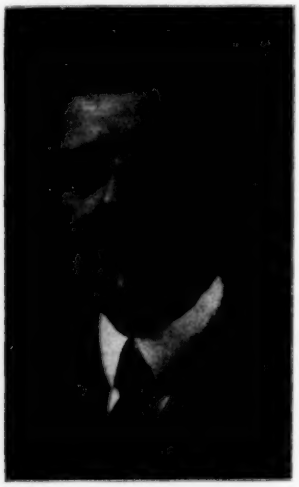
"Two kinds of pharmaceutical journalism are recognized as having come into existence during the past quarter of a century. There is the kind which disseminates ideas, upholding high professional aims and directing the progress of pharmacy; and a contracting type which exploits the purely commercial features of pharmacy, catering principally to minds that seek cheap entertainment, or to those who have small regard for ethical considerations and are ready at any time to sacrifice the higher things of the profession for financial gain.

"In the conduct of the *American Druggist* Mr. Mayo has always striven to preserve the golden mean, and while insisting on a high standard of educational qualification for the pharmacist, he has not overlooked the commercial interests, nor the necessity of a sound training in business system and efficiency."

What Mr. Keenan has said concerning Mr. Mayo's untiring and valuable services to the Association will be heartily endorsed by the members of that body, who, without exception, regard his election to the presidency as a promotion well deserved, and who also believe that his many estimable qualities of heart and head fit him admirably to discharge with credit to himself and the Association the somewhat exacting duties of the high office to which he has been called. Long live the president-elect!

THE NEW PRESIDENT OF THE N. W. D. A.

The newly elected president of the National Wholesale Druggists' Association, George W. Lattimer, was born in Columbus, Ohio, December 6, 1856. His literary education was obtained in the public schools of that city, at a preparatory school in Cleveland,



GEO. W. LATTIMER,
President of the N. W. D. A.

and at Amherst college, from which latter he graduated in June, 1879, with the degree of bachelor of arts. After a short period spent in the study of law, Mr. Lattimer went to Colorado and became interested in the mining business, but a year later returned to Columbus, and shortly afterwards became secretary and treasurer of the Hocking Valley Coal Mine Company. In 1882 he associated himself with George B. and Linus Kauffman in the formation of the wholesale drug firm of Kauffman, Lattimer & Rising, which, following the withdrawal of Mr. Rising, was changed to the firm Kauffman, Lattimer & Co. In 1888 the business was incorporated as The Kauffman-Lattimer Co., of which Mr. Lattimer has been from the beginning, and is at the present time, secretary and treasurer.

Mr. Lattimer attended the organization meeting of the N. W. D. A., in 1882, and has since that time been a constant attendant and active member, filling various official positions and committee chairmanships. Perhaps his most valuable work has been done as chairman of the Committee on Fire Insurance, and it is said that as a result of the efforts of this committee the cost of insurance to wholesale druggists has been reduced from a general average rate of $1.45 to an average rate of 45 cents.

In his home city Mr. Lattimer has been prominent in many civic and commercial erterprises. He has been president of the Columbus Chamber of Commerce, president of the Columbus City Park Commission, and a member of the State Board of Arbitration, and was a member of the State Floods Commission, which was charged with the distribution of the funds raised for the relief of the sufferers by the flood in the spring of 1913, acting on this body as the representative of the American Red Cross Society. He is president of the Central Philanthropic Council, which is a consolidation of the organized charities of Columbus, and is also a trustee of the Humane Society.

He is a member of the Columbus Club, the Columbus Athletic Club, and was one of the founders and is a director of the Columbus Country Club.

The esteem in which Mr. Lattimer is held by his fellow citizens, as evidenced by the numerous civic and other honors which have been conferred upon him is held to be abundantly warranted by his business associates who have been in close touch with him for so many years. He represents the very best type of American citizenship, liberal in his views upon all subjects, always ready to contribute of his time and means to the welfare and uplift of his fellowmen, diligent in business, faithful in the discharge of every trust which he accepts, and has always been a sturdy supporter of the highest principles of commercial honesty in his business relations.

His numerous friends in his home city and throughout the state feel that his election to the presidency of the N. W. D. A. was an honor most worthily bestowed, and deem themselves also honored through his elevation to that position.

Of General Interest

THE NATIONAL WHOLESALE DRUGGISTS' ASSOCIATION THIRTY-NINTH ANNUAL MEETING, JACKSONVILLE, FLA., NOVEMBER 18, 19 AND 20, 1913.

The first session of the meeting was called to order by President Albert Plaut of New York on Tuesday morning at 10:30 o'clock, and the Divine blessing was invoked by Rev. Dr. French of the First Presbyterian Church of Jacksonville. Judge Swearington, the Mayor, then welcomed the association to the city and his address was responded to by Mr. Lee M. Hutchins in a speech full of wit, humor and poetry. The reception of delegates to the association then took place, and Dr. Adolph W. Miller presented the fraternal greetings of the American Pharmaceutical Association, to which Mr. Ludwig Schiff made a fitting response. Mr. Lee Willisee brought the best wishes of the New York State Pharmaceutical Association to which Mr. C. Mahlon Kline made reply. Mr. Thomas F. Main voiced the most cordial greetings of the New Jersey Pharmaceutical Association, to which Mr. S. Massingham responded.

President's Address.—President Plaut then delivered his address, which we regret that lack of space compels us to summarize, so full was it of wise suggestion and helpful thought. General business for the last thirteen months, he said, had been quite good, the volume of imports and exports of the country being by far the largest in its history. He spoke of the interference with European trade caused by the Balkan war, and deplored in strong and feeling language the evils of all wars, which he said were caused by greed and selfishness. He referred to the Mexican internecine conflict and hoped that it might be soon succeeded by a permanent peace founded upon justice and law. He spoke of the near completion of the Panama Canal as a monumental epoch-making work in its effect upon the intercourse of the world. He referred to the recent tariff-legislation as being that which all had expected and said that its effects having been discounted, as soon as business had adjusted itself to the new lines, he thought the trade-outlook for the coming year was encouraging. As to the income-tax he said he thought it the fairest of all taxes if properly administered and that it had come to stay as a part of our fiscal system, for while it was not a burdensome tax, it produced an enormous revenue. He approved the reform in currency-legislation now being considered by Congress and predicted extensions of the parcel-post. He gave strong commendation to the Harrison anti-narcotic bill, but said that to be effective it must be supported by efficient state legislation. He called attention to the slight decrease in the active membership of the association, and stated that it was in accordance with the natural course of events, which would be likely to reduce the number of wholesale druggists in the county still more. He passed in review several interesting court decisions, among these being those of the Wisconsin Syrup cases, and the Sanatogen case, and quoted at length a decision of Judge Grubb of the U. S. Court at Birmingham, Ala., giving legality to certain acts of the Southern Wholesale Grocers' Association, and said that this decision clearly shows that there is a wide field in which an association of wholesalers could legally work, and in which it could produce results of great value to its members. He spoke in commendation of the Sherman law and suggested that the time might come when a merchant who cuts prices would be fined and imprisoned the same as railroad officials are penalized if they cut rates. He approved the work of the Eleventh International Congress of Pharmacy, and said it might in time lead to a universal Pharmacopœa and uniformity of laws regarding sales of medicines in all civilized countries. He recommended the association to petition Congress for the speedy adoption

of the metric system by the United States. He commended highly the services of Messrs. Holliday and Toms, the General Representative and the Secretary of the association, and in conclusion voiced his appreciation of the honor bestowed upon him by his election to the Presidency and also of the loyal and earnest support accorded him by all the members.

The Secretary's Report.—The Secretary reviewed the important work of his office, commented upon the number and importance of the bulletins issued by it and announced the forthcoming production of "The Green Book" to supersede "The Red Book," published in 1911. He reported the present membership as being 260 active and 326 associate members.

The Treasurer's Report.—This report showed:

Receipts from all sources.....	$29,356.38
Disbursements	21,828.31
Balance	$7,528.07

Report of Committee on Commercial Travelers and Selling Methods.—The committee called attention to the lack of marked success of mail-order drug-houses; spoke of the necessary qualifications in a salesman; suggested that more thought should be given to selling-policies; discussed over-solicitation of orders; approved the establishment of a telephone-detail to solicit and receive orders; spoke of the advantages of providing automobiles for certain classes of salesmen; recommended that members discourage the parcel-post business and long-distance reverse calls, the payment of freight-charges, and the solicitation of "splits." It recommended direct settlements with customers, the use of an itemized expense account by salesmen, discussed their proper compensation and approved "The Uniform Vacation Plan" which, they said, was highly recommended by those who had adopted it.

Committee on Credits and Collections.—This report discussed the question of cash-discount customers, noting that little change had taken place in the number of that class during the year, except in the South, where there was a slight improvement, and says, "a due regard for the welfare of our customer, as well as that of ourselves, suggests the wisdom of counselling with him on this subject on all proper occasions." It suggested the need of caution in the extension of credit to "the confectioner class of crafty nomads, employing names irreconcilable to their nationality and as changeable as their places of abode. Keen and unscrupulous, he devotes his talents rather to the framing of clever getaways, than to the upbuilding of a permanent business along honorable lines." It emphasized the importance of fire-insurance in relation to credit; recommended the adoption of uniform terms and discounts, and it condemned, as "most insidious," methods which prevail in certain sections in transgression of a fair and just system, and strongly recommended the charging of interest on past-due accounts. It suggested that where accounts are closed by notes, that these be made payable monthly and so drawn that "default in the payment of one would automatically mature the others." It condemned over-solicitation of orders, deceptive claims of percentage of profit by manufacturers and advanced dating, and recommended co-operation in the matter of credits and collections.

Committee on Employer's Liability and Workmen's Compensation.—The report of this committee was so complete and so replete with facts, figures and argument that it does not admit of summarization with justice to so admirable a document. It should be read in its entirety, not only by every employer, but by every person interested in social reforms. One of its paragraphs will show the idea of the committee in relation to this question: "Whether you choose to see in this prevention movement a growing realization of our social responsibilities or a mere desire to save dollars, the result is sure to be far-reaching and beneficent." The committee says that we should not neglect to study the experience of foreign countries, in order that we may not be overzealous in "our endeavor to right long-standing wrongs," and recommends that the members investigate the possibilities of mutual-liability insurance.

Committee on Fire Insurance.—The report of the committee called attention to the small number of fires in wholesale drug establishments and gave a list of those which had occurred during the year with their causes, losses, etc. Among these causes were the breaking of a bottle of bi-sulphide of carbon, the flood at Dayton, O., fuming nitric acid and the spontaneous ignition of sulphur which was packed in second-hand bags which

had probably previously contained niter or potash. This fire occasioned a loss of $62,000. The report commented in strong language upon the enormous fire-waste of the country, which reached a total in 1912 of $225,300,000, and urged the attention of the members to the ways of fire-prevention which were being advocated by the National Fire Protective Association and other bodies. It discussed the various charges for water-sprinkler service, and suggested a conference to determine an equitable charge for the same; the necessity for a uniform bill for reciprocal insurance and decribed in detail the legislation of several states regarding insurance matters. It entered at length into the question of automobile insurance and recommended that members endeavor to secure more equitable rates for same, as well as greater security from loss.

Committee on Proprietary Goods.—Their report called attention to the fact that the sales of these preparations in one-twelfth, one-sixth, and one-quarter-dozens were about ninety-four percent of the total sales—831 actual sales of one fairly popular preparation accomplishing the delivery of but 900 separate pieces, and claimed a larger remuneration for the jobber than it at present allowed. It condemned over-solicitation, "free goods," the granting to buying-clubs of the same terms allowed to jobbers, and discussed at length the question of fixed retail prices.

Committee on Legislation.—The report of this committee was most exhaustive of the subject of its activities. It described the National legislation of the year, and then took up in detail the changes which had been made in the laws of the various states. It recommended strongly uniformity of legislatin in regard to food and drug laws.

Committee on Memorials.—This committee reported resolutions on the demise of twelve active and three associate members, with a short life-history of each.

Committee on the Prevention of Adulteration.—A most exhaustive and interesting report was presented by this committee. It congratulated the association upon the steady advance towards better conditions and said: "This widespread spirit of reform and improvement is a beneficent, effective accomplishment in the pharmaceutical industry and deserves our heartiest commendation and cooperation, though candor compels us to assert that instances not infrequently occur which show that there is also need of the exercise of rare discretion to prevent senseless oppression and useless annoyance. There is nothing to be gained by ignoring the obvious fact that in this, as in all great reformative crusades, which have been inaugurated since the beginning of our history, rushing to extremes may result in harm from the activities of narrow-minded officials and enthusiastic but wholly impractical theorists. Popular enthusiasm is like all great forces, in that, while capable of yielding beneficent results when properly guided and restrained, can also work incalculable harm when directed only by prejudice." It called attention to the fact that "high-power papain" could be made by the addition of pepsin to papain and that its sale might lead the seller to the courts. Another surprising statement of the report was that the Cramp Bark of commerce is not collected from the Viburnum Opulus, but is really the bark of the mountain maple (Acer spicatum) and that the description of Viburnum Opulus in the U. S. P. is that of maple bark and not of Cramp Bark. The committee say that the bark of the Acer spicatum has not only displaced the Viburnum Opulus in America but it has also done so in Europe, and that it would appear, from the use of the substitute, that the maple has a medicinal activity very similar to that of Cramp Bark.

Committee on Trade-Marks.—This committee had a lengthy and interesting report, citing numerous decisions of the courts in determining the rights of manufacturers in the names of their specialties; giving the amended law of the United States in relation to trade-marks, and stating much of interest to those who might desire to acquire a foreign trade-mark for their preparations, in its comprehensive review of the laws of different countries in relation to the same.

Committee on Transportation.—A most interesting and instructive report was that presented by this committee. The subjects treated in it were The Railways, Inter-State Commerce Commission, Freight Rates, Express Companies and Rates, Parcel Post, Panama Canal, Free Customs Port for New York, and Local Deliveries, and when it is said that each one of these subjects was treated most exhaustively it may be seen that it is impossible to summarize so excellent a report. It should be read in full by

every one interested in any one of these subjects.

Committee on Anti-Narcotic Legislation.—This committee reviewed the proceedings of the National Drug Conference and the various steps which led to the passage of the Harrison Anti-Narcotic Bill by the House of Representatives and gave also a list of states that had adopted anti-narcotic laws during the past year.

Committee on Local Associations.—This committee laid it down not only as a moral principle but as a standpoint of policy that "it would be best if each wholesale drug-house throughout the country could realize that the most lasting or enduring success can be best obtained, in fact can only be obtained, by establishing a fixed policy and by conducting its business upon a clean, legitimate basis, relying upon service, quality and candid, fair, honest treatment in order to secure patronage."

Board of Control.—This board in various reports concurred with the recommendations of the committees and this affirmative action was approved by the convention.

After the passage of several complimentary votes by the convention the officers-elect present were installed into their respective offices. The officers-elect for the coming year are:

President—George W. Lattimer.
First Vice-President—F. C. Groover.
Second V. P.—Charles F. Michaels.
Third V. P.—Charles E. Potts.
Fourth V. P.—C. S. Littell.
Fifth V. P.—G. S. Fleece.
Secretary—Joseph E. Toms.
Treasurer—Samuel E. Strong.
Board of Control—Charles Gibson, Chairman, James W. Morrison, George R. Merrell, Mr. Bedwell, John T. Kennedy.
General Representative—F. E. Holliday.

After the installation of officers the Convention adjourned. The place selected for the next meeting is Indianapolis, the time to be probably early in October. The Convention also voted to meet in Del Monte, California, in the year 1915.

The banquet was a most notable occasion. It was served in the main dining-room of the Windsor Hotel on Thursday evening, and the menu was a most attractive one. Mr. John W. Durr acted as toastmaster. The speakers of the evening were the retiring President, Mr. Albert Plaut; George W. Lattimer, the new President; Judge W. T. Bland, who spoke for "Florida, Past, Present and Future"; Duncan U. Fletcher, who spoke on "Deeper Waterways"; Charles S. Adams, who responded to the toast of "The Ladies." The President's reception was held on Tuesday evening and was a most delightful occasion. The other entertainments were an automobile ride and reception for the ladies on Wednesday, a steamer-trip on the River St. Johns, and on Friday one hundred and twelve of the Convention left Jacksonville for a trip to Havana, Cuba, an excursion which took a week to accomplish.

E. C. M.

Proceedings of the Local Branches

"All papers presented to the Association and its branches shall become the property of the Association, with the understanding that they are not to be published in any other publication than those of the Association, except by consent of the Committee on Publication."—By-Laws, Chapter X, Art. III.

Reports of the meetings of the Local Branches should be mailed to the editor on the day following the meeting, if possible. Minutes should be *plainly* written, or typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly, and manuscript should be signed by the reporter.

<>

CITY OF WASHINGTON BRANCH.

(October Meeting.)

This meeting, held October 15, 1913, at the National College of Pharmacy, was the first meeting of the local Branch for the winter of 1913-1914, and in the absence of the President, Dr. Lyman F. Kebler, who was out of the city on official business connected with the Department of Agriculture, Mr. W. S. Richardson acted as Chairman. In the absence of the Secretary who was detained on urgent personal business, Mr. S. L. Hilton acted as Secretary.

The first paper presented was "The Opportunity for Selection and Breeding in Drug Plant Culture," by Dr. W. W. Stockberger. The speaker introduced his subject by pointing out that until recently very little was done along the lines of procuring plants

carrying greater drug percentums by culture, all efforts having been directed in producing hybrids.

The object of drug culture was, he stated, to produce varieties or strains of plants which would show marked increased drug constituents, and at the same time give future plants continuing the same results.

From the results already obtained, there is sufficient ground for future work, for, as a fact, the constituents of medicinal plants, especially those containing alkaloids, have been increased.

Observation has shown that no two plants act the same under cultivation, and plants of the same species grown in different locations vary largely as to constituents. In some cases these constituents were inactive or inert, and in others the constituents appeared more active than normal. This condition, the speaker stated, was under investigation.

Another object of this culture was to cultivate authentic specimens of medicinal plants that proper standards can be maintained and established.

While many of the forest drugs have been cultivated in the field and garden, experiments are now being conducted with conditions as nearly like that of the natural plant as it is possible to make them.

Dr. G. A. Russell followed Dr. Stockberger and outlined in detail the work being done at the gardens in Madison, Wisconsin, and the results which had so far been obtained there. He brought out strongly the necessity for only lightly covering seeds, stating that to do otherwise meant absolute failure. The cost of producing some plants of the experimental scale had been prohibitive of inducing commercial enterprise, but such was not the case in the majority of the plants cultivated. Nearly all the plants needed as much attenton as would plants in a truck garden.

Dr. Russell gave extensive details of the experiments with pyrethrum, wormwood, stramonium and horehound. In calculating the cost of these experiments, great care has been taken to figure on the bases of land and labor rather than dollar and cents, for the reason that land and labor cost varying amounts in the different localities.

The second paper of the evening was on the subject, "The Possibility of Increasing the Alkaloidal Content of Belladonna Plants," by Mr. A. F. Sievers of the Bureau of Plant Industry, Department of Agriculture.

Considerable discussion followed the reading of each paper by all who were present.

Respectfully submitted,

HENRY B. FLOYD.

<>

CITY OF WASHINGTON BRANCH.

(November Meeting.)

The meeting was called to order November 19 by the President, and after disposing of routine business, the program was taken up. Dr. H. A. Seil of New York City discussed observations on asafœtida and balsam Peru.

Asafoetida.—The asafœtida problems during the past five years were briefly reviewed. Various kinds of asafœtida were discussed. The standard proposed by several European workers, based upon the amount of combined sulphur present in asafœtida, was considered very inadequate, because it would countenance adulteration, in some instances, to the extent of fifty percent. The so-called pepper asafœtida was referred to as a very low grade product. The cooperative work engaged in during the past year showed that the lead number was a good index as to the quality of the asafœtida examined.

The most valuable portion of the standard recognized by the Pharmacopœia is the fact that the material to be known under the designation "asafœtida" is to be derived from certain sources.

There appeared to be no difficulty whatever in manipulating the article itself in other respects so as to comply with the pharmacopœial requirements. The ash limit is of no particular value. The practical worthlessness of the alcohol solubility test is shown by the fact that when it became known to the dealers abroad that asafœtida containing less than 50% of alcohol soluble material would not be permitted entry, they soon found ways and means whereby to raise this deficiency, if any existed. The fact is that adulteration was ascertained through the trade long before it was possible to show that actual adulteration did exist by the usual methods of analysis. In time, however, methods of analyses and circumstantial evidence were sufficient to justify detention of asafœtida and in some instances some of the asafœtida was not permitted en-

try, notwithstanding the protests made by some dealers. In discussing this matter Dr. Kebler called attention to the fact that during the Russia-Persian War, the trade represented that it was impossible to obtain asafœtida of proper quality and it was incumbent upon the Agricultural Department to meet the situation. This was done by the Treasury Department issuing a decision permitting entry of asafœtida containing not less than 35% of alcohol soluble material, provided it be used under certain conditions. Soon after this decision was promulgated, the adulteration to increase the alcoholic soluble material was resorted to. The trade was very much disturbed because of the detention of asafœtida containing the requisite quantity of alcohol soluble matter. Protests were entered, but there appeared to be no doubt whatever but that the asafœtida was deliberately manipulated. The entrance of such asafœtida was refused.

During the last year or so, asafœtida of good quality has been offered at the ports, containing the proper alcohol soluble material, and so far as it has been possible to determine, free from adulteration. It would, therefore, seem desirable to abrogate the present decision.

The chief difficulty, however, in the whole situation is the fact that none of the asafœtida worked on so far by analysts is apparently of known authenticity. All data appear to be based on unknown material, and we cannot expect to place the matter on a satisfactory basis until authentic material is collected, and carefully examined.

Others who discussed the paper were Messrs. Bradbury, Emery, Hoover, Ewing, and Wilbert.

Balsam of Peru.—The article discussed was the so-called imitation balsam which has been offered for import for a number of years. The earlier shipments were found to contain considerable quantities of resin. This substance was, however, not found in later shipments. All the examinations show that the material has been constantly changing in composition, which was probably due to the variation in manufacture of the commodity, as well as the use of different basic ingredients. The contention of the manufacturer and importers was that the article complied in every particular with the tests laid down in the Pharmacopœia. They seem to forget, however, that a part of the standard of the Pharmacopœia was that the material must be derived from a certain tree. The imitation product if permitted entry into the United States could be readily mixed with the genuine material without much prospect of its being detected. The incentive to do this is increased by the fact that the imitation is much cheaper than the natural.

During the past year not much of the imitation balsam was offered at New York City, and the indications are that it is being shipped to the home of the natural balsam and there mixed. The methods used for detecting the imitation were described. It was pointed out that the methods originally devised to detect the imitation were not applicable to samples examined a year or so later.

The same question as to uncertainty of authentic material was raised as in connection with asafœtida.

The subject was discussed by Messrs. Bradbury, Jackson, Seil and Kebler.

The Traffic in Smoking Opium.—Mr. A. B. Adams, Chemist of the Internal Revenue Department, spoke of the work of that service in conjunction with the illicit opium traffic in the United States. He exhibited a smoking outfit and indicated the manner in which opium smoking is usually conducted. The cunning of the dealers and purveyors of illicit opium is almost beyond human conception. It happens at times when raids are made on places known to be trafficking in illicit opium, no indications of the business could be positively established. A case was cited where such a raid was made and that in disposing of the opium by throwing it into the sewer, some of the material accidentally splashed upon a brick. The brick was removed from the wall and the material splashed on the brick examined. It was conclusively shown that the material was opium and a conviction followed.

In many instances it was necessary to depend upon the evidence obtained in the examination of residues left in containers or rags used in the manufacture of smoking opium. In order to successfully prosecute it is incumbent upon the Internal Revenue Office to show that smoking opium was actually manufactured. It is believed by some that the Government actually licenses the manufacture of smoking opium. This is absolutely erroneous. The fact that no opium is permitted entry into the United States ex-

cept for medicinal purposes would preclude the issuing of such licenses. He spoke with great gratification relative to the voluntary discontinuance of certain pharmaceutical houses in the manufacture of extract of opium which is considered simply a variety of smoking opium. He regretted exceedingly, however, to state that some manufacturers refused to discontinue this practice and that the Department was not in position to force them.

Attention was called to the fact that a manufacturer of glass ware refused to sell the Department certain materials because the Government handled distilled liquors, but did supply illicit manufacturers of smoking opium with jars in which to handle the commodity. They may have been perfectly innocent in this transaction, but the indications did not point that way.

A can of genuine smoking opium containing 6⅔ ounces was exhibited and the statement was made that in New York City this package would bring $40. If this can should bear the Internal Revenue stamp, which was formerly used in conjunction with smoking opium imported into this country, the price of the can would be $90. The same amount of the common extract of opium would bring about $20.

Attention was called to the difficulties which have been encountered in the enforcement of the law, due to a recent court decision. In course of discussion it developed that some of the opium smokers smoked as many as two or three dozen pellets at one sitting. They did not consider the extract of opium or the smoking opium as made in this country as satisfactory as the genuine material imported into this country. The method of expressing this fact is by stating that "it had too much kick," by this, meaning evidently that it contained too much morphine. The fact was also established that smoking opium was prepared from the ashes of residues left from the first smoking and the article thus prepared often contained a high percentage of morphine.

The paper was discussed by Messrs. Stewart, Jackson, Hilton, and Kebler.

Federal Control of Habit-Forming Drugs.—Mr. S. L. Hilton read a communication entitled "The Present Status of Federal Control of Habit-Forming Drugs." Mr. Hilton reviewed briefly the efforts made during the past few years toward the regulation of the importation and sale of habit-forming drugs into the United States, by the Federal Government particularly. Attention was, however, directed to the recent efforts of the National Drug Trade Conference which resulted in the drafting of an anti-narcotic bill, now popularly known as the "Harrison bill." This bill has for its primary purpose, regulating the distribution and sale of opium, morphine, cocaine, coca, their derivatives and preparations in the United States. The bill was introduced in Congress by Representative Harrison and was passed by the House in extra session. It was then taken up by the Senate, where it was read twice and referred to a sub-committee for consideration. There does not appear to be very much likelihood of the bill being passed in extra session and from the activities at present, it does not appear likely that the bill will pass without considerable opposition.

Mr. Hilton appears to be of the opinion that the drug trade ought to have followed up the bill rapidly after its passage in the House and thus avoid massing of opposition due to an interim of time. The bill is opposed in a number of quarters and unfortunately there is an open rift in the retail trade.

The recent Treasury decision, having for its object regulating cocaine, coca, their derivatives and preparations, from the time they enter United States to the ultimate consumer was also discussed. Mr. Hilton considered the declaration illegal and oppressive. He stated that it would be impossible even for the Government officials to buy these commodities without declaration and that in transferring it from one individual to another in the same Department, the declaration would be required.

Mr. Hilton referred to Mr. Stewart, an attorney, who had given the decision considerable attention, and suggested that he be extended the privilege of making some remarks, which was granted.

Mr. Stewart stated that in his opinion the Treasury decision exceeded the authority granted by Congress, that there was no question whatever but that the Government under the Food and Drugs Act was empowered to deny entry to cocaine or coca, but that it did not have the power to regulate these commodities after they had been once entered. This power, however, could readily

be given under the law if Congress would slightly modify the Act.

In discussing the paper, Dr. Kebler reviewed briefly the various steps taken previous to the issuing of Treasury Decision No. 33456. The Government under the Food and Drugs Act detained a vast amount of smoking opium offered at the San Francisco port and smaller quantities at several other ports of entry. The contention raised was that importers were not advised of the contemplated action under the law and therefore the smoking opium detained should be released and the trade informed as to the position of the Government relative to this commodity.

At the request of Dr. Wright, who had been appointed a special commissioner looking to the study of anti-narcotics and subsequent legislation, it was agreed to allow this Act to remain in abeyance, giving him an opportunity to secure specific legislation by Congress. The result was that an opium act was passed in February, 1909, excluding opium for other than medicinal purposes. As we have heard tonight, while it does exclude smoking opium, it did not preclude the surreptitious manufacture of smoking opium in the United States from opium presumably imported for medicinal purposes. In the fall of 1911, a tentative regulation was sent out by the Agriculture Department, tending to regulate the importation of opium, morphine, cocaine, coca, their derivatives and preparations. Much opposition developed to the regulation as framed, but no one appeared to be opposed to that part of the regulation tending to control cocaine or coca preparations. During the year 1912 some coca leaves were detained at the port on the ground that they did not bear a declaration as to the quantity or proportion of cocaine they contain and also because the leaves might be injurious to the health of the people of the United States. The importers of their own volition stated that they would be willing to label the packages as to cocaine content and also place their books at the disposal of the Department for the purpose of determining whether or not the drug was so used as to be deleterious to the public health. After a number of shipments were thus detained and permitted entry it was decided to make the enforcement uniform and accordingly the Secretary of the Treasury promulgated the Treasury decision in question. Dr. Kebler furthermore stated that the Department was prepared to use its best efforts in controlling and regulating habit-forming drugs and that every possible assistance would be given to the passage of any law which would effectually accomplish this purpose.

Replying to Mr. Stewart's statement to the effect that the decision was not within the law, attention was called to Treasury decision governing the importation of asafœtida conditionally. In fact many imports have been permitted entry conditionally, but so far as is known no material objections have been raised to this practice until the cocaine decision was put into force and effect.

Mr. Hilton stated that the Harrison bill will accomplish almost what the decision would, and furthermore that the decision was conducive to smuggling.

Mr. Hilton was informed that it was impossible to see exactly how it induced smuggling any more than under present conditions, and furthermore that even though smuggling was resorted to in the past, it would not be any worse than at present. A case was cited where an attempt was made to smuggle 700 ounces of cocaine into the United States and that the smuggler is at present serving a term in prison.

The bill was further discussed by Messrs. Wilbert, Jackson, Bradbury, Richards, Stewart, and others.

The meeting was considered as one of the most profitable in the history of the local Branch.

Adjourned.

HENRY B. FLOYD, Secretary.

<>

CITY OF WASHINGTON BRANCH.

(December Meeting.)

By invitation of Dr. A. S. Cushman and H. C. Fuller, director, and member, respectively, of the Institute for Industrial Research, the December meeting of the City of Washington Branch of the American Pharmaceutical Association was held at the institute's new building, 19th and B streets, N. W., Washington, D. C.

Before the meeting, Dr. Cushman and Mr. Fuller opened and lighted the entire building to the members and guided them through its modern and well-equipped laboratories. Many delicate and intricate experiments and

tests, relating directly to pharmacy and otherwise, now being conducted there, were explained and commented upon.

In the absence of the President (Dr. Lyman F. Kebler), the meeting was called to order at 8:30 by Mr. W. S. Richardson, the first vice-president. By motion, the reading of the minutes of the previous meeting was dispensed with.

Under new business, the treasurer reported a deficit which has existed for some years, and then upon motion, properly made and seconded, the secretary's report, showing expenditures for the current year, was accepted, without audit, and referred to the treasurer for settlement.

The committee on nominations, appointed at the November meeting, was then called upon to report. Mr. Lewis Flemer, chairman, requested Mr. H. C. Fuller, the secretary, to read the report of the committee, which consisted of Mr. Flemer, Mr. Fuller and Dr. George W. Hoover.

The recommendations of the committee were as follows: For president, Martin I. Wilbert; first vice-president, W. S. Richardson; second vice-president, Dr. Rodney H. True; secretary, Henry B. Floyd; treasurer, Wymond H. Bradbury; member of Council, Dr. Lyman F. Kebler; and further recommended that the office of secretary and that of council be separated.

Immediately following the reading of the committee's report, Mr. Wilbert declined the nomination for president. Discussion showed that the office of secretary and that of member of council had been separated in 1912 and that the term of the present member of the council did not expire until the end of 1914. The committee then withdrew its recommendation concerning the separation of the office of secretary and member of the council, and also withdrew all its nominations except that for secretary and treasurer.

From the floor, Mr. W. S. Richardson was nominated for president, Dr. Rodney H. True for first vice-president, and Dr. Henry E. Kalusowski for second vice-president. No other nominations being made, and one only having been made for each office, it was moved that the secretary be directed to cast the ballot of the Branch as a unanimous ballot in favor of the nominees. The secretary invited attention to the fact that he was on the list of nominees and suggested the selection of some other member to cast the ballot. His suggestion failed to meet approval, whereupon he cast the ballot in favor of the nominees as directed. The acting president then declared the following officers elected for the year 1914: President, W. S. Richardson; first vice-president, Dr. Rodney H. True; second vice-president, Dr. Henry E. Kalusowski; secretary, Henry B. Floyd, and treasurer, Wymond H. Bradbury.

The election of officers having disposed of all new business for the evening, Mr. H. C. Fuller presented a paper entitled "Conservation in Relation to Pharmaceutical Chemistry." Mr. Fuller described clearly and forcibly existing conditions in medical and pharmaceutical chemistry, noting the persistency with which the manufacturer pursues the "almighty dollar." The "hit or miss" plan of mixing medicines, forming some new concoction to which is attached a high-sounding, valueless (and generally meaningless) name, with the hope that it will stay mixed and catch the fancy of the consumer, was lamented. Inadequate research work, insufficient therapeutic testing, incomplete analysis, and utter disregard for the well-established laws of chemistry, are bringing and have brought into the market each year thousands of valueless preparations which burden the shelves of the retailer. Yet he has to carry all of these because some smooth-tongued and gifted detail man has gotten one or two physicians in his neighborhood to write an occasional prescription for such mixtures.

The immense inroads made by a certain foreign firm manufacturing pharmaceuticals was commented upon, and the key of its success against American competition was attributed to the vast research work conducted by it. Not one of their preparations, it appears, is allowed to enter the market until its stability, therapeutic activity and exact chemical content has been definitely ascertained by most exhaustive experimentation.

The amount of research work done by American houses was compared with that of foreign and found to be all but nil.

A remedy was suggested for the prevention of fakes and other evils, in having the American Pharmaceutical Association establish an extensive chemical laboratory where the pharmaceutical products offered could be analyzed for their chemical contents and their therapeutic values ascertained. Reports of each analysis would be forwarded to its members and every man in the business

soon would know to an absolute certainty what each preparation he is selling is, and what it can be expected to do.

Such a laboratory would immediately expose fakes and eventually, when its findings would come to have the faith of the entire public, fake preparations would no longer be marketable. Pharmaceutical manufacturers would exercise greater care before presenting new preparations and the claims of value for such products. The retail druggist would profit because his shelves would contain only valuable and marketable matter.

Mr. Fuller presented specimens of a number of preparations recently analyzed, by the institute, and showed to what extent the public is fooled by well-written advertisements. A four-ounce bottle of diluted lactated pepsin, sold for a dollar, commanded much comment, for under a copyrighted name it was sold as a brightener of the eyes and a beautifier.

Wrinkle-removers, sold for the same price, proved to be nothing more than pieces of inexpensive court plaster. Diabetic and other foods for which fabulous and mythical claims have been made, and for which enormous prices have been asked, proved to be nothing but cheap, roasted grains. Hair-removers, costing $1.50 a box, amounted to about five cents' worth of rosin and balsam mixed. The alkaloidal claims for cod-liver oil also came in for criticism.

In the discussion which followed, Dr. George W. Hoover stated that the Bureau of Chemistry has much unpublished information concerning these fakes, and if, as contemplated, a bulletin giving this information is published, much of general interest will come out and there will be some genuine surprises. There has been a decided improvement in the character of pharmaceutical products since the passage of the pure food act, and another decade will bring forth even greater improvements, is his belief.

The question of declaring various drugs, upon which Mr. Fuller touched, was discussed, and, in addition to the content declaration, it was suggested that the effect upon the system be outlined. Cocaine legislation, now so much discussed, furnished food for much controversy, the opinion of those present as to the ultimate effect of the legislation now proposed and recently enacted being about equally divided.

The wasteful methods employed by our manufacturers was shown by example. Certain refuse thrown out now by chocolate manufacturers is worth $100 to $150 per ton, and lanoline, much finer than that now imported, can be made from the waste thrown out by woolen manufacturers.

Mr. Wilbert at this point called attention to the German Pharmacists Association, which has been doing work of the character outlined by Mr. Fuller (its laboratories being located in the Berlin College of Pharmacy), and whose findings have been going to its members as bulletins.

At this moment Dr. Kebler arrived but did not assume the chair. His trip to Hartford, Conn., in connection with a cocaine case, had been useless, as the defendant had "skipped" bail.

"Commercial Alcohol in Germany" was the next subject and was presented by Dr. Rodney H. True, who outlined conditions which have led to the extensive alcohol industry in Germany. It appears that this industry is a part of a great economic undertaking commenced by Frederick the Great and which has had hearty government support ever since. It was clearly shown that as an individual industry it was a failure, but as a part of an economic farming arrangement it had not been a failure.

Potatoes are much grown in the eastern or sandy provinces of Germany in land which would be called poor here.

Crops are rotated in the order of potato, grain and grass. The potato uses but little of the ash content of the soil and is deeply planted. While smaller than the American, it is higher in starch content and contains less water. The yield, with the deep planting noted, is about three times the average American crop, and it leaves the land in excellent shape for the grain to follow. In fact, the grain output has been doubled by this means.

Much of the potatoes are sent to the western provinces and to the cities, the major portion, however, going to the still. The mash left over is used to feed the stock. Altogether, this economic arrangement has been wonderfully developed, and, while no profit is obtained directly from the alcohol, it enters into this great plan as an inseparable and unreplaceable cog.

The plans for disposing of the alcohol, the societies for its protection, and the peculiar

conditions incident to this industry, were all minutely and interestingly described.

The American attempt to commercialize alcohol, while by no means a success, to date has shown enough to warrant a continuation of the experiments already made.

The effect of tax levies and the qualities of the potatoes came in for much good-natured comment and well-placed witticisms.

The question of the location of the permanent home for the American Pharmaceutical Association was then brought to the attention of the Branch. The proposed locations were discussed and much comment was made of any attempt to locate the home out of Washington. Mr. Wilbert spoke very feelingly and strongly in favor of its being located in Washington, where it would be free from the influences of politics and near the national legislative body of the country. It seems to be the logical situation for such a home as is proposed.

The following motion was then proposed, seconded and carried:

WHEREAS, It is proposed to provide a permanent headquarters or home for the American Pharmaceutical Association, and

WHEREAS, Efforts have been and are now being made to secure the location of this permanent headquarters in several widely separated cities, and

WHEREAS, The American Pharmaceutical Association is incorporated under the laws of the District of Columbia and is now operating under the general provisions of this incorporation,

Now, therefore, We, as members of the City of Washington Branch of the American Pharmaceutical Association, would respectfully remind the officers and the council of the parent organization that there are many and weighty reasons for locating the permament home of the American Pharmaceutical Association in the city of Washington.

The secretary was also directed to bring this matter to the attention of the council.

The William Proctor memorial was also considered and it was urged that if it should be in the form of a statue and that if the American Pharmaceutical Association built here, the proper place for the statue would be in front of the home. "'Twould be better in our front yard than in the back yard of some government building," quoted Mr. Hilton, for he knows, as all Washingtonians do, that memorial statues of all but national heroes are placed in obscure parks and "lost" forever. There are a dozen such statues in Washington, of which no one ever hears and few have ever seen; all are in a state of neglect.

Dr. Kebler, in closing, with well-chosen words thanked the branch for the honor which it had conferred upon him to elect him its president and for the hearty support he had received. In turn a vote of thanks was tendered him for his excellent programs and ever persevering efforts to better the branch.

A vote of thanks was tendered to Dr. Cushman and to Mr. Fuller for their kindness in tendering the use of the institute to the society, and it was directed that a note be recorded in the minutes of the motion.

The meeting adjourned at 10:45.

Mr. Albert Hale, of the Pan-American Union, was to describe the "Peru Balsam Industry," but was unable to remain after ten to deliver his talk. His address will be given at some meeting in the near future.

This meeting was held in the magnificently furnished and equipped library of the institute, and was one of the best attended meetings of the year.

Respectfully submitted,
HENRY B. FLOYD, Secretary.

<>

NEW YORK BRANCH.

(November Meeting.)

A regular meeting of the New York Branch of the American Pharmaceutical Association was held on the evening of November 10th. Vice-President H. V. Arny presided.

Following the reading of the minutes and the report of the Treasurer, Prof. W. C. Anderson, Chairman of the Committee on Legislation, reported that Dr. Alsberg, Chief of the Federal Bureau of Chemistry, had expressed the opinion that the treasury decision designed to regulate the traffic in cocaine would not be applied to sales of the drug on prescriptions as the prescriber's order was sufficient record. Professor Anderson pointed out that the decision made no exception and the matter was one of enforcement. Concerning the Harrison Federal anti-narcotic bill, the committee reported that there was renewed activity in Congress and that the passage of the measure seemed probable. As

an outcome of the enforcement of the State "day of rest law," Professor Anderson said, there had been started a movement for a law that would oblige druggists to close their stores on Sunday. He thought that such a step would lead to an increase in dispensing by physicians. The several pending congressional measures and other evidences of a desire for the curtailment of the sale of tablets of mercuric chloride were reviewed in the committee's report. The chairman was of the opinion that the greatest good would be accomplished through the prohibition of the publication of details concerning poisoning fatalities in the newspapers.

Prof. G. C. Diekman presented the report of the Committee on the Progress of Pharmacy. Among other matters reviewed in the report were a report on the examination of medicinal substances, published in the *Sud-Deutsche Apotheker Zeitung*; an article on "Further Developments in the Physiological Examination of Digitalis," by Focke (*Zeit. Exp. Med. Therap.*), appearing in the *Pharmaceutical Journal*; a German article on the spontaneous combustion of fireworks; and an article on "The Relation of the Specific Gravity and the Evaporation Residue of Tinctures and Fluidextracts," by Ziegler (*Pharm. Zentralh*). Professor Diekman referred also to several items in the advance report of changes in pharmacopœial standards.

This report was discussed by Messrs. Mayo, Raubenheimer, Mansfield, and Murray.

Secretary Hugh Craig read a communication from George M. Beringer, the President of the parent association, in which reference was made to a proposition to have the association take some part in a drug, chemical, and food exposition to be held in Madison Square Garden, New York, January 19th to 26th next. Mr. Beringer suggested that the eastern branches of the association hold a conference in connection with the exposition and that the New York Branch initiate a movement for such a meeting.

After some discussion by Messrs. Craig, Roemer, Latham, Kantrowitz, Raubenheimer, and Murray a committee, consisting of John Roemer, Hugo Kantrowitz and J. H. Rehfuss, was appointed to investigate the project and report at the next meeting.

Hugh Craig, J. L. Mayer and B. L. Murray were appointed to constitute a Committee on Nominations.

Joseph E. Lauber, Esq., read a paper entitled "Safeguarding the Use of Poisons." He contended that the aim of endeavors to safeguard the handling of dangerous substances should be to protect the ultimate user. To accomplish this, uniform, distinctive methods were, in his opinion, necessary. A distinctive shape for poisonous substances in solid form and a container of distinctive shape for solids and liquids, he believed, would afford the most effective safeguards. He favored the jackstone shape for poisonous solids.

Proper labeling, the speaker considered essential. And he thought that the label for poisonous substances should bear, in addition to the word "poison," a list of antidotes and directions for emergency treatment of the particular poisoning.

Mr. Lauber advised that the Branch appoint a committee to draw up a bill, enlist the support of the State Pharmaceutical Association, and work strenuously for its enactment, allowing no temporary failure to daunt it in such a worthy purpose.

The subject introduced by Mr. Lauber, particularly as it applied to mercuric chloride, was discussed to a considerable extent. C. A. Mayo stated that he had been informed that M. I. Wilbert, of the United States Public Health Service, had prepared a report on the much-agitated matter of the misuse of mercuric chloride, but that the service evidently had no plan of action in view. He considered the wrapping of each tablet in paper or foil to be the best safeguard. Otto Raubenheimer pointed out that the German Pharmacopœia requires that tablets of mercuric chloride be of a cylindrical shape, colored red, wrapped in black paper with a poison mark, and sold in a distinctive bottle. In his opinion a flat, square, green tablet would be better, and national legislation is essential to assure uniformity.

Prof. Jeannot Hostmann could see no valid reason why the sale of mercuric chloride tablets should not be restricted to prescriptions. Veterinary surgeons, he said, hand out the tablets indiscriminately. Joseph Weinstein expressed a similar view. Thomas Latham, referring to the widespread popular use of these tablets, said that this was the bichloride age in the cycle of results following newspaper publicity. J. H. Rehfuss believed that mercuric chloride was necessary to the public as a guard against septicemic infection. But he thought that its sale might well be limited to prescriptions or at least to weak solutions.

He stated that it was a common practice for physicians to leave the tablets in plain envelopes at the homes of patients. Professor Anderson was of the opinion that accidental poisonings with mercuric chloride were far less numerous than suicides. He was in favor of confining all selling and dispensing of these tablets to prescriptions.

Messrs. Mayo, Wimmer and Roller also took part in the discussion. As a result the following resolutions were passed and referred to the legislative committee of the New York State Pharmaceutical Association:

WHEREAS, The public welfare is endangered by the indiscriminate sale and distribution of bichloride of mercury; therefore, be it

Resolved, By the New York Branch of the American Pharmaceutical Association, that the public welfare demands that it should be made illegal to sell, dispense or give away bichloride of mercury in any form except upon the written prescription of a licensed physician or veterinarian, dispensed by a registered pharmacist or druggist.

WHEREAS, The increase in the use of bichloride of mercury tablets as an agent for committing suicide seems directly traceable to the sensational newspaper reports of cases in which it has been used; therefore, be it

Resolved, By the New York Branch of the American Pharmaceutical Association, that all newsapers which have regard for the public welfare be requested to refrain from mentioning the particular agent used whereever suicide is committed by means of poison.

John Roemer read a paper on "The Need of Authority for Non-Official Medicaments." This was in part an account of a conversation between a doctor who wanted to prescribe digitalin and a druggist who wanted to know what sort. The prescriber and the dispenser after considering in turn the standards or lack of standards of digitalis, its derivatives and preparations, arrived at the conclusion that pharmacy was somewhat behindhand in the matter of furnishing necessary information about many useful drugs.

Continuing, Mr. Roemer said that the Pharmacopœia did not, and scarcely could, keep abreast of the progress in medicine, and hence the composition of many remedials was unknown or wrongly stated. He decried the fact that pharmacists were obliged to rely upon the council on pharmacy and chemistry of the American Medical Asociation for information which pharmacy should furnish to medicine, and could from that source obtain but meager details and no standards. He declared that there was a need for a central bureau under pharmacal auspices to examine and standardize new medicaments and many old ones.

In discussing this paper, Mr. Raubenheimer said that the committee of the parent association, on standards for unofficial drugs was designed to meet the need mentioned by Mr. Roemer. He agreed that a central laboratory was necessary for the proper carrying on of the work. J. L. Mayer instanced Vleminck's solution as an illustration of an official standardless preparation. The color and sulphur content, he said, were a matter of conjecture. Specimens he had examined contained from 3½ to 24 percent of sulphur. Several speakers pointed out the unreliability of physiological standardization.

Mr. Lauber and Mr. Roemer were formally thanked by the Branch.

HUGH CRAIG, Secretary.

<>

CHICAGO BRANCH.

(December Meeting.)

The December meeting of the Chicago Branch of the American Pharmaceutical Association was held Tuesday evening, the sixteenth, with an interested company in attendance.

After the disposal of business, Mr. E. N. Gathercoal introduced the subject of the evening, "The Pharmacognosy of the Rhamnus Barks." He showed specimens of the bark from Rhamnus Frangula and R. cathartica, which are European shrubs; R. Purshiana, R. californica, and R. crocea, from western United States, and R. chlorophorus, a Chinese plant. Also samples of barks used as adulterants of Cascara and Frangula, including the one found a year or so ago by Mr. Miller of Eli Lilly & Co., in a large lot of Cascara.

Mr. Gathercoal discussed the characters of the plant supplying each of these, mentioned its habitat and pointed out the external markings of each bark, their resemblances, as well as the features by which they may be readily distinguished. He stated that the adulterant found, but not identified, by Mr. Miller, disclosed in its internal structure all the ear-marks of a cherry bark, and, as on maceration in water, a slight odor of hydrocyanic acid was observed, it probably was from a species of cherry.

He also presented a review of the litera-

ture on the chemistry of the Rhamnus barks and showed the chemical tests proposed for the monographs of Rhamnus Purshiana and Frangula in the new U. S. P.

His part of the discussion was closed with a projection-microscope exhibit of sections prepared from the various barks and a description of the tissues of each, bringing out points of similarity and dissimilarity in their structure.

Mr. L. E. Warren, of the chemical labroatory of the A. M. A., Professors A. H. Clark, C. M. Snow, G. D. Timmons and W. B. Day and Messrs. J. H. Wells, Wm. Gray, I. A. Becker and C. F. Storer took part in the discussion.

W. B. DAY, Secretary.

<>

NASHVILLE BRANCH.

(December Meeting.)

At the meeting of the Nashville Branch of the A. Ph. A. held at Furman Hall, December 11th, the By-laws were amended by making the fiscal year concurrent with the calendar year, as is the case with the parent body.

A social get-together meeting of local druggists and their wives was planned for January, and Messrs. Burge, White and Hutton were appointed as a committee to make the necessary arrangements.

Mr. Ira B. Clark then read a very interesting paper on the subject "Window Dressing." He stated that a drug store window was a valuable medium for advertising, although some seemed to think it useful only for the admission of light and as a repository for various drug-store junk. It does not require any special artistic ability to dress a window but a little application of gray matter and judgment in the selection of seasonable and profitable goods. He thought that the color to be used in dressing the window should either harmonize with the color of the article displayed or should be in sharp contrast with it. Red and green, blue and white, and orange and black harmonize well. Special emphasis was laid on price cards, as the story is just half told without them. Toilet articles, a combination of tooth brushes, powder and paste, "own preparations," olive oil, stationery, rubber goods, surgical goods, and occasionally a collection of prescription files, and a percolator in operation make good displays.

In conclusion, he strongly discouraged the practice of advertising patent medicines in the drug-store window.

Following the reading of this paper a lengthy discussion was had on the subject participated in by M. E. Hutton, J. B. Sand, C. O. Prince and J. M. Rogoff. An amusing experience was told by Dr. Rogoff about a display of moth balls he once made in his window. An Italian who had just arrived in America, walked in and bought two packages. In a few minutes he returned with an angry look on his face and a stilletto in his hand and, approaching the doctor, shouted, "Candy stinks!"

Dr. J. O. Burge read a report on Alcresta, Prof. Lloyd's new alkaloidal reagent, and Dr. E. A. Ruddiman exhibited a sample of it he had just received.

A motion was made by W. R. White looking to the establishment of closer relations with the Academy of Medicine, and a committee was appointed for this purpose.

The Branch then adjourned.

WILLIAM R. WHITE, Secretary.

<>

PITTSBURGH BRANCH.

(December Meeting.)

The initial meeting of the Pittsburgh Branch for the winter season took place Friday evening, December 12, at the College of Pharmacy. Too many strenuous duties devolving upon the officers and the dependable members made it impossible to get the wheels to going around earlier, as they should have done.

This meeting was honored by a short visit from Chancellor McCormick, of the University of Pittsburgh, for the first time.

A communication was read inquiring into the possibility of securing a suitable place in this end of the state at which the 1915 meeting of the Pennsylvania Pharmaceutical Association could be held. After discussion and reference to a number of points that might be considered in this connection, the matter was referred to the secretary as a committee to investigate and if a suitable place can be found it will be presented and recommended at the 1914 meeting of the P. Ph. A.

On motion, President Campbell named the following committee on nominations: J. A. Koch, Louis Saalbach, B. E. Pritchard. After serious consideration as to available candidates who could be depended upon to render

service, the following ticket was named: President, Andrew Campbell; vice-presidents, Chas. E. Willets, P. G. Walter, L. K. Darbaker; secretary, B. E. Pritchard; treasurer, P. Henry Utech. Committee chairmen: Membership, J. S. O'Brien; practice, W. H. McDonald; medical relations, Geo. W. Kutscher; education and legislation, John C. Wallace; publicity, B. E. Pritchard; program, F. J. Blumenschein. The report was on motion received, and there being no objections nor nominations from the floor, the nominees will be voted for at the January meeting in conformity with the by-laws.

From the question box the accompanying prescription was taken with the statement that after having been twice prepared, by different dispensers, it had thrown down a brown precipitate and information as to what caused it was sought for:

Sodium salicylate.....	drams 2
Sodium bromide.....	drams 1½
Caffeine citrate.....	grs. 36
Aqua menthæ pip.....	ozs. 1½
Syrup simplex, q. s.....	ozs. 3

The suggestions made were that it was probably due to some impurity present in the sodium salicylate; that a trace of iron due to coming in contact with a spatula in compounding, but as these were merely conjectures the problem was referred to the Committee on Practice for solution.

Louis Breyer, class 1913, Pittsburgh C. of P., favored the Branch with a valuable talk on window displays. He said: "The three cardinal points to be considered in window displays are what to display, how and when. No window display can prove successful in selling goods that has not been given thoughtful consideration and planned for in advance. It is too important a branch of business getting to be gone at in a haphazard, hit or miss manner. Some of my best results from window advertising have been obtained after having given three or four weeks careful study and laying out of plans. In one store where I was employed there was a large stock of a face cream which was considered dead and had been allowed to cumber the stock room until it had become a nuisance. I took hold of that item and made up a striking window display with it as a prominent feature. It had previously been held at the cut rate schedule as to price, but in this exploitation I placed a card bearing the full retail price, with the result that while it had failed to move before at a reduced figure, during the life of this display we disposed of $75.00 worth, which proves that it is not essential to demoralize prices to produce results.

On another occasion on an order for five cases of Welch's grape juice there came through an error 50 cases. Upon notifying the shipper he requested that the excess quantity be held subject to order. It occurred to me that while so large an amount was on the premises it might as well be earning something, so I determined to make a big window display while there was plenty of material for the purpose. This plan I carried out so successfully that before the shipper could place the goods elsewhere the entire 50 cases were sold, and at full price, no cut being necessary to make sales. And, mark you, this was not in a big, prominently located city store either. Mr. Breyer described in more or less detail several striking displays that had been pulled off, as well as others which are just in process of evolution for future use. For so young a man Mr. Breyer has splendid ability and bids fair to rise to the top as a window display artist.

During the discussion following Mr. Breyer's talk, President Campbell described a very attractive and novel display for window use involving the arrangement of a series of bottles carrying water under air pressure to simulate the process of distillation, accompanied by a sign which read, "Distilling Witch Hazel for our Trade," which caused quite a run on witch hazel of more than a temporary character. Mr. Campbell made use of the blackboard in showing how this scheme was worked out.

Dr. J. A. Koch was on the program for a talk on "The London Drug Market," but before entering upon that topic he presented a very instructive and interesting report of the proceedings of the International Pharmaceutical Congress at The Hague, to which he and Prof. J. P. Remington were sent as representatives by the A. Ph. A. Dr. Koch took his audience on a very enjoyable and instructive tour through the famous drug market of the world, which is located in Mincing Lane, London, where practically all the crude drugs from every country in the world are primarily marketed. He described the methods in use for conducting the regular public sales at which the market quotations for

crude drugs are fixed. He exhibited a number of lists of such drugs as were to be offered at certain dates in which appeared shipments from almost every drug growing country on earth. There are numerous firms having quarters in the market place, each one specializing in certain products. Some show but one line such, for instance, as what we know as Gum Benzoin, but that name does not appear in the lists; there it is known as Gum Benjamin. Other brokers show only Asafœtida of all sorts and conditions, still others various grades of Tragacanth, while Cardamom Seeds in endless variety engage the attention of others.

The study of methods used by the natives in packing and preparing drugs for shipment from the country of their origin is a revelation to the visitor, as is likewise the very open and fair manner in which the drugs are shown to prospective buyers. No one is ever asked to bid without full knowledge of the character and condition of the article offered, so that cheap, poor quality, worthless drugs found on the market are there with malice aforethought, and not because it just happens to be a bad lot, a fact which shoppers for low prices in drugs should keep in mind.

The pamphlet containing an abstract of all the changes proposed for incorporation in the forthcoming Ninth Revision of the U. S. Pharmacopœia was presented for discussion and consideration, but owing to the lateness of the hour, it was on motion referred to Dr. Louis Saalbach to examine and bring up such portions thereof as he deems worthy of discussion at the January meeting.

B. E. PRITCHARD, Secretary.

<>

SAINT LOUIS BRANCH.

(December Meeting.)

The Saint Louis Branch of the American Pharmaceutical Association held a regular meeting in the Saint Louis College of Pharmacy, Friday evening, December 19, 1913. The meeting was called to order by Vice-President Schulte. The minutes of the previous meeting were adopted as read.

Under the order of new business, Mr. Wilkerson made a motion which carried, that the subject for discussion for the next meeting be the use of shorter names and synonyms for some of the U. S. P. and N. F. preparations. The program was then taken up. Mr. Schulte presented a paper on "Windows and Window Dressing."

On motion of J. W. Mackelden, seconded by C. T. Buehler, Mr. Schulte's paper was received.

In the discussion of Mr. Schulte's paper so many good points were brought out that it was decided to make it one of the papers for the January meeting.

There being no further business, and on motion, the meeting adjourned.

JULIUS C. HOESTER, Sec'y.

The Pharmacist and the Law

ABSTRACT OF LEGAL DECISIONS.

CONDITIONAL SALE—BANKRUPTCY—PREFERENCES. A soda fountain was sold on a contract of conditional sale about five months before proceedings in bankruptcy were begun against the purchaser. The seller claimed the proceeds in the hands of the trustee. The contract of sale was never recorded as required by the law of Missouri, in which State the bankrupt resided. Three days before the proceedings were begun the bankrupt gave the seller a chattel mortgage upon the property somewhat in excess of the price in the contract, and this was duly recorded. In the interval between the contract and the mortgage the bankrupt incurred other debts in its busines aggregating more than the value of the property in question. The seller claimed under the contract and the mortgage independently. It was held that the contract of sale, not being recorded, was void as to subsequent general creditors of the buyer and its trustee. As the bankrupt was hopelessly insolvent when the chattel mortgage was executed, and the claimant's representatives had reasonable ground to believe a preference was intended, and would result from the mortgage, it was held to be void as against the bankrupt's trustee. But it was held that the right of subsequent creditors to urge their objections to the contract and mortgage was defensive merely against the seller so as to invalidate a lien giving a preference on distribution on bankruptcy, and did not entitle the creditors to priority in the distribution of proceeds as against the seller. He

was entitled, on filing his claim as a general one, to participate equally with the subsequent creditors in the distribution of the bankrupt's estate.—*L. A. Becker Co. v. Gill,* 206 *Fed.,* 36.

VALIDITY OF SALE BY BANKRUPT PARTNER.—One of the members of a partnership conducting a soda fountain business, joined in a sale of the stock and fixtures to the father-in-law of his partner, and retired from the business, which was continued by his former partner alone, but in the firm name. On a petition by his trustee to have the sale set aside it was held that the fact that the partner who continued to carry on the business thereafter contracted indebtedness on the strength of his possession of the property afforded no ground for an attack by the bankrupt or his trustee on the validity of the sale.—*In re Young,* 206 *Fed.,* 187.

SALE OF STOCK—SELLER'S REMEDIES—RIGHT TO RETAIN ADVANCE PAYMENT.—In an action to recover back the advance payment made on the purchase of a stock of drugs, it appeared that the plaintiff contracted to purchase the defendant's stock, paying $2,500 in cash, and agreeing to pay the balance on delivery of the bill of sale when the statute relating to sales in bulk had been complied with, which would require at least five days. The plaintiff took possession and retained it for 24 hours. He then claimed that he had been induced to purchase by fraudulent representations, and demanded that the defendant take back the stock and repay the cash already paid. The defendant took charge of the store and continued to operate it in all respects as though no sale had been made or contemplated, selling a large proportion of the stock and purchasing new goods. It was held that the sale was entirely executory at the time the plaintiff repudiated it, and the defendant, having again taken possession before title passed, could not enforce specific performance. His only remedy was an action for damages for breach of the contract to purchase. The seller would only be entitled to retain the advance payment as damages for the purchaser's breach of contract. That would ordinarily be the difference between the market value of the stock at the time of the sale and the contract price. But the defendant did not counterclaim for damages. All he asked was a dismissal of the case with costs. As he did not deny that he was placed in the identical position in which he was before the plaintiff took possession, his damages were only nominal. His action in retaking the goods and exercising acts of ownership over them constituted a waiver of his right to either sue upon the contract or bring an equitable action to enforce it. The plaintiff was held entitled to recover the advance payment made.—*McCrea v. Ford, Colorado Court of Appeals,* 135 *Pac.,* 465.

SCOPE OF EMPLOYMENT—UNLICENSED CLERK—A master is not liable for every wrong which the servant commits while in the performance of his contract of employment. His responsibility only attaches when the servant is acting within the real or apparent scope of his employment and in line with his duties. Suit was brought against the proprietors of a drug store for injuries to the plaintiff due to the alleged negligence of an unlicensed clerk in putting pure trikresol on the plaintiff's arm, which was thought to be blood poisoned. The complaint alleged that after a physician who was in the store at the time had requested the clerk to prepare a 1 percent solution of trikresol for use on the plaintiff's arm, the physician left the pharmacy, and the clerk negligently, and because of his incompetency in undertaking to fill the prescription, prepared for and gave to the plaintiff a quantity of pure and unadulterated trikresol, which caused the injury complained of. It was held that the substantive act alleged was the supplying of a dangerous solution of medicine, when a harmless or beneficial one had been prescribed, and that this constituted negligence within the scope of the clerk's employment, for the result of which the master was liable. It was also held that the sale of the trikresol by the unregistered clerk was conclusive evidence of negligence under the Oregon Statute L. O. L. 4750, declaring that it shall be unlawful for any person to sell any drug, medicine, or chemical, or to dispense or compound any prescription of a medical practitioner, unless such person be a registered pharmacist, or a registered assistant pharmacist. Judgment for the plaintiff was affirmed.—*Goodwin v. Rowe, Oregon Supreme Court,* 135 *Pac.,* 171.

RECORDING SALE OF POISONS—CONSTRUCTION OF STATUTE.—The Delaware statute, 24 Del. Laws, c. 140, 14, provides that before delivering to a customer strychnine, arsenic or corrosive sublimate or any poisonous compound, combination, or preparation, thereof "there shall be recorded in a book kept for the purpose the name of the article, the quantity delivered, the purpose for which it is al-

leged to be used, the date of delivery, the name and address of the purchaser, and the name of the dispenser." In the first case under the statute it appeared that the defendant had sold bichloride of mercury to a customer and entered the sale on a slip of paper showing the sales for the day, which with other daily slips were regularly put in an envelope kept in his safe. It was held that this was a violation of the statute; but in view of the defendant's evident desire to abide by the law, only the minimum fine was imposed.—*State v. Hopkins (Del.)*, 88 *Atl.*, 473.

CONTRACT FOR SALE OF DRUG STORE FIXTURES.—An offer and acceptance for the sale of drug store fixtures were in the following form: "We propose to furnish and erect complete in your store at Charleston, W. Va., the following fixtures: 25-foot wall case (McLean style); 18-foot tincture shelving; 11-foot patent medicine case; 6-foot tobacco case and humidor; 6-foot mirror; 12-foot ℞ work counter; 12-foot ℞ partition; 18-foot 6-inch settee upholstered in green leather; 7-foot 6-inch mirror, above settee; 14-foot 6-inch "L" case; 36-foot cases; 5-foot wrapping counter, glass front and sliding floor; 10-foot laboratory table. Exposed parts of alcove in solid veneered mahogany, all glass bevel plate and all mirrors No. 1 grade same, metal back; all cases to be all plate—plate shelves 10-inch marble base; finish—best quality, hard polished and rubbed. Complete plans, specifications and details to be submitted and approved by purchaser. Price, $2145. Bernard Glocker Co., per Leon Shipman. Accepted: Jas. A. Carr, Carr's Drug Store." In an action for damages for breach of the contract by the defendant, the defendant argued that until complete plans, specifications and details were submitted by the plaintiff and approved by the defendant, the contract was incomplete, not binding on, and therefore revocable by either of the parties. The court did not agree to that conclusion, because Carr did not give the plaintiff an opportunity to prepare and submit plans and specifications for his approval. Within an hour after accepting the order, he arbitrarily sought to revoke it, assigning as the only reason that he had purchased the same fixtures from another company at a materially reduced offer. It was held that the contract was mutually binding on both parties and that Carr could not revoke it. His refusal to take the fixtures in conformity with the contract was a breach thereof.

The contract was not invalid because of the concluding clause thereof. It was sufficiently definite in description of the fixtures.—*Bernard Glocker Co. v. Carr, West Virginia Court of Appeals*, 79 *S. E.*, 732.

SALE OF COCAINE—PROOF.—On appeal from a conviction for an unlawful sale of cocaine it was held that if the sale was made upon the prescription of a physician, that fact lay particularly within the knowledge of the defendant, and consequently it devolved upon him, and not upon the state, to establish it. There was no direct evidence that the negro boy to whom the sale was made was not a physician or dentist; but the presumption was that he was neither, and therefore, if he was a physician or dentist, it devolved upon the defendant to prove it. There was a prima facie presumption that the person to whom the sale was made did not belong to the exceptional class of persons to whom the right to practice medicine or dentistry has been given; the presumption relieving the state from the necessity of proving the negative.—*Miller v. State, Mississippi Supreme Court*, 63 *So.*, 269.

ALTERATION OF CONTRACT AFTER DELIVERY OF GOODS.—Action was brought upon a contract for the sale of a quantity of hair tonic to a drug store. The defense was alteration of the contract after delivery of the goods. The contract provided that the plaintiff agreed to contract with a certain advertising company for a certain number of lines of advertising, specifying the Tribune and Journal newspapers, which were published in the defendant's town, the advertising to be executed during a year following delivery of the goods. It further provided that the plaintiff agreed to take back at invoice price all goods remaining unsold in the hands of the purchaser "at the end of the Iowa advertising contract." The defendant claimed that the word "Iowa" had been added to the contract after delivery, which was denied by the plaintiff. The jury found for the defendant. On appeal it was held that the alteration of the contract after delivery by the insertion of the word "Iowa" was material, since that made the rights of the parties depend, not upon the contract for advertising in the particular papers specified, but upon the termination of such Iowa advertising contracts as the plaintiff might have made. Judgment for the defendant was affirmed.—*Hessig-Ellis Drug Co. v. Todd-Baker Drug Co., Iowa Supreme Court*, 143 *N. W.*, 569.

NOTICES OF JUDGMENT—FEDERAL.

No. 2448—*Adulteration and Misbranding of Orangeade.* Labeled "Orangeade." Consisted of a solution of invert sugar and tartaric acid, flavored with orange oil and colored. Frances Croppe Co., Chicago, Ill., shippers. Condemnation consented to. Minnesota.

No. 2450—*Misbranding of Turpentine.* Substitution of at least 21 percent of mineral oil. Southern States Turpentine Co., Cleveland, Ohio, shippers. Product destroyed. New York, S. D.

No. 2459—*Adulteration and Misbranding of Extract of Peppermint.* Substitution of peppermint, water and alcohol. Moses R. Stern, New York, shipper. Plea of guilty. Sentence suspended. New York, S.

No. 2463—*Adulteration of Tincture of Iodine.* Standard of strength and purity differed from test laid down in U. S. Pharmacopoeia. W. C. Field, Washington, D. C., seller. Plea of guilty. Fine of $5. Dist. of Columbia.

No. 2475—*Adulteration of Oil Coriander.* Contained approximately 20 percent of caraway oil. James B. Horner, New York, shipper. Plea of guilty. Sentence suspended.

No. 2476—*Adulteration and Misbranding of Oil of Cloves.* Mixed with ethyl alcohol. Crandall Pettee Co., New York, shippers. Plea of guilty. Fine of $50. New York, S.

Council Business

COUNCIL LETTER No. 6.

PHILADELPHIA, PA., Dec. 8, 1913.

To the Members of the Council:

Motions No. 10 (*Appropriation of* $250 *for Committee on Membership*), *No.* 11 (*Appropriation of* $25 *for Women's Section*), *No.* 12 (*Increase of Salary of Editor of Journal*), *and No.* 13 (*Election of Members, applicants Nos.* 9 *to* 17, *inclusive*), have each received a majority of affirmative votes.

Motion No. 14 (*Appropriation of* $25 *for National Drug Trade Conference*). Moved by J. H. Beal, seconded by J. A. Koch, that the sum of Twenty-five Dollars be appropriated for the use of the National Drug Trade Conference. The motion has been approved by the Committee on Finance.

Motion No. 15 (*Election of Members*). You are requested to vote on the following applications for members:

No. 18. Julius C. Hoester, 108 S. 4th St., St. Louis, Mo., rec. by H. M. Whelpley and J. W. Mackelden.

No. 19. Alexander Benjamin Journeaux Moore, 12 Winchester Ave., Westmount, Pro. Quebec, Canada, Dean of the Montreal College of Pharmacy, rec. by J. W. England and J. H. Beal.

No. 20. Mary R. Hamilton, Pinney St., Rochester, Pa., rec. by Mary L. Creighton and J. H. Beal.

No. 21. Miriam Grace Truby, Penn and West Sts., Wilkinsburg, Pa., rec. by Mary L. Creighton and J. H. Beal.

No. 22. John Francis Walsh, 12 Fort Square, Greenfield, Mass., rec. by Elie H. LaPierre and Chas. E. Hoey.

No. 23. Lawrence Stanton Brigham, 1 Gordon St., East, Savannah, Ga., rec. by Robt. A. Rowlinski and J. H. Beal.

No. 24. John Abner Handy, P. and P. Department, Larkin Co., Buffalo, N.Y., rec. by Joseph P. Remington and J. H. Beal.

J. W. ENGLAND,
Secretary of the Council.

<>

COUNCIL LETTER No. 7.

PHILADELPHIA, PA., Dec. 13, 1913.

To the Members of the Council:

The following Budget of Appropriations for 1914 is submitted by the Committee on Finance:

Proposed Budget of Appropriations for 1914.

Item.		
1	Salaries	$ 6,500
2	Journal	5,000
3	Printing, postage and stationery	1,000
4	Clerical expenses, Secretary's office	1,000
5	National Formulary	1,000
6	Miscellaneous expenses	300
7	Drayage, freight and expressage	150
8	Stenographers	250
9	Traveling expenses	300
10	Committee on membership	750
11	Committee on unofficial standards	300
12	Proceedings and Year Book	2,500
13	Badges and bars	50
14	Certificates	50
15	Premium on Treasurer's bond	50
16	Insurance	50
17	Journal for reporters	35
18	Section on Scientific Papers	25
19	Section on Education and Legislation	25
20	Section on Commercial Interests	25
21	Section on Practical Pharmacy	25
22	Section on Historical Pharmacy	50
23	Section on Pharmacopoeias and Formularies	25
24	Women's Section	25
25	National Syllabus Committee	25
		$19,510

While the appropriation for the JOURNAL is fixed at $5000, and warrants will be drawn against this, the net cost of the JOURNAL will be much less by reason of the receipts from advertisements.

Do you approve of budget of appropriations for 1914 as above proposed? This will be regarded as *Motion No.* 16 (*Approval of Budget of Appropriations for* 1914).

At the Nashville (1913) meeting the following resolution was adopted:

"*Resolved*, That the Council be authorized to approve the production of a convenient button or pin style of the official badge of the Association, that may be worn conveniently at all times by members, and that this form of the official badge be distributed to dues paid members by the Treasurer."

In accordance with this resolution, bids from several makers of badges were obtained. In the judgment of President Beringer and General Secretary Beal, the designs and bid submitted by the Whitehead & Hoag Co., of Newark, N. J., are the most satisfactory.

Design No. 3 was selected.

"Sketch No. 3 shows the round button, 9/16" with a white field, shield enameled blue with a gold border. No. 3-A is the layover which shows what the cutout shield would be with a gold border and a blue ground. The enamel surface will be nicely stoned and polished.

We can furnish any of these designs at the following net prices, f.o.b. Newark, N. J.

In lots of	Gold finish and hard enamel	Gold Plate and hard enamel	Double Gold Plate with rolled gold shoe and hard enamel
1000.....	.11 each	.14 each	.19 each
2000.....	.10½ each	.13½ each	.18½ each
Future Order Prices			
500.....	.11 each	.15 each	.19 each
1000 and 2000.....	.10 each	.13 each	.18 each

The prices quoted provide for furnishing the emblems with regular screw buttons, jeweler's catch pins or stick pins; or an assortment of these styles may be had in an order without extra charge."

(The Whitehead & Hoag Co., Charles S. Robbins, Mgr., Philadelphia Badge Department.)

Motion No. 17 (*Appropriation of* $250 *for badges and pin buttons*). Moved by G. M. Beringer, seconded by J. H. Beal, that the sum of $250, or as much as may be necessary, be appropriated for badge buttons and pins in accordance with the resolution of the Nashville (1913) meeting, that the badges and pins be supplied to dues-paid members of the Association at the price of twenty-five cents each, which shall include cost of postage, and that the Secretary of the Council be authorized to order one thousand badges and pins, assorted, of best quality, design No. 3, as per bid submitted by the Whitehead & Hoag Co.

The appropriation is approved by the Committee on Finance.

The suggestion has been made to present the badge free to new members, but it is felt by General Secretary Beal that this proposition should be left to a later date, probably about the time the State Association meetings are being held.

F. T. Gordon, who presented the resolution at the Nashville Meeting for a button badge, writes:

"My opinion is that we should have a button badge worth wearing and keeping, and that such buttons should be sold to present members at cost, and that they should be presented by the Association free to each new member on becoming a member of the Association, as a badge of membership. New members could also purchase the present official badge, if desired, but the button badge would, as President Beringer writes, be an excellent aid to the Committee on Membership if given without cost to new members. Present members, I am sure, would be willing to pay 20 or 25 cents for a button badge that would last for years and be worthy of the Association. As a matter of fact, I firmly believe that a good test of the interest of members in the Association could be made just this way, notifying them through the JOURNAL that the button badges could be obtained at cost and that the other expenses would be defrayed by the Association. Those who are worth-while members would get them, the others would probably pay no attention to the matter."

J. W. ENGLAND,
Secretary of the Council.

UNITED STATES PUBLIC HEALTH SERVICE.

(Changes in Pharmacists' Assignments, etc.)

Phelps, E. B., Professor of Chemistry. Directed to proceed to Wilmington, via Raleigh, N. C., upon request of the State Board of Health, for the purpose of investigating the local water supply and making recommendations in respect thereto. Nov. 21, 1913.

Voegtlin, Carl, Professor of Pharmacology. Directed to proceed to Savannah, Ga., for conference with the officers engaged in pellagra investigations. Nov. 21, 1913.

BOARDS CONVENEED.

Board of medical officers convened to meet at the Bureau for the purpose of preparing questions for the mental examination of eight pharmacists of the Service, to determine their fitness for promotion. Detail for the board: Assistant Surgeon General W. G. Stimpson, chairman; Assistant Surgeon General W. C. Rucker, member; Surgeon J. W. Schereschewsky, recorder. Dec. 2, 1913.

Boards of medical officers convened for the purpose of conducting the mental and physical examination of certain pharmacists of the Service to determine their fitness for promotion to the grade of pharmacist of the first class:

Marine Hospital, Detroit, Mich. Senior Surgeon H. W. Austin, chairman; Assistant Surgeon J. Bolton, recorder.

Marine Hospital, San Francisco, Cal. Surgeon R. H. Woodward, chairman; Assistant Surgeon L. O. Weldon, recorder.

Marine Hospital, Chicago, Ill. Surgeon J. O. Cobb, chairman; Assistant Surgeon D. S. Baughman, recorder.

Marine Hospital, Key West, Fla. Passed Assistant Surgeon H. M. Manning, chairman; Acting Assistant Surgeon S. D. W. Light, recorder.

Marine Hospital, Savannah, Ga. Passed Assistant Surgeon R. M. Grimm, chairman; Acting Assistant Surgeon A. M. Cleborne, recorder.

Marine Hospital Building, Cincinnati, O. Passed Assistant Surgeon W. H. Frost, chairman; Assistant Surgeon H. M. Weill, recorder.

Board of medical officers convened to meet at Fort Stanton, N. M., for the purpose of conducting the mental and physical examination of Pharmacist Harri D. Leach to determine his fitness for promtion to the grade of Pharmacists of the second class.

Changes of Address

All changes of address of members should be sent to the General Secretary promptly.

The Association will not be responsible for non-delivery of the Annual Volume or Year Book, or of the JOURNAL unless notice of change of address is received before shipment or mailing.

Both the old and the new address should be given, thus:

HENRY MILTON,
From 2342 Albion Place, St. Louis, Mo.
To 278 Dartmouth St., Boston, Mass.

Titles or degrees to be used in publications or in the official records should be given, and names should be *plainly* written, or typewritten.

<>

TANNER, THOMAS B.,
From Cleveland, Ohio.
To Residence Unknown.

SCHEIPS, THEO. I.,
From 534 Oakdale Ave., Chicago, Ill.
To 143 N. Wabash Ave., Chicago, Ill.

GREYER, J.,
From Vine and Findlay Sts., Cincinnati, O.
To 1926 Race St., Cincinnati, O.

DECOURCY, L.,
From 827 8th, Cincinnati, Ohio.
To N. E. Cor. 8th and Baymiller, Cincinnati, Ohio.

ACKERMAN, P. J.,
From 548 N. High St., Columbus, Ohio.
To 549 N. High St., Columbus, Ohio.

ANDERSON, WM. O.,
From 315 Greene St., Brooklyn, N. Y.
To 315 Greene Ave., Brooklyn, N. Y.

COMBS, DELTA E.,
From St. Louis, Mo.
To 948-58 Wolfram St., Chicago, Ill.

WILLIAMS, FRED. R.,
From Manila, P. I.
To Residence Unknown.

DILLY, OSCAR C.,
From 2101 W. Walnut St., Louisville, Ky.
To 104 W. Chestnut St., Louisville, Ky.

MILLER, E. R.,
From Auburn, Ala.
To 214 N. Murray St., Madison, Wis.

Improved Bacterial Therapy

SEROBACTERINS

(Sensitized Bacterial Vaccines)

"Action **sure, rapid, harmless and durable.**"—A. Besredka.

Serobacterins are suspensions of bacteria "sensitized" by treatment with specific immune serum.

The advantages of **Serobacterins** may be briefly summarized as follows:

1. **SEROBACTERINS do not cause opsonic nor clinical negative phase. In the process of sensitization the bacteria are saturated with the specific antibodies, consequently they do not absorb antibodies from the patient, preventing unfavorable reactions or the so-called negative phase.**

2. **SEROBACTERINS produce immediate active immunity.**
(24 hours after the first injection an effective immunity is present and marked improvement is usually noted in the condition of the patient.)

This rapid action makes them invaluable in treatment and in preventive immunization. This is of great importance in controlling or preventing epidemics.

3. **SEROBACTERINS cause no local or general reactions.**
(These reactions constituted the principal undesirable feature of the Bacterial Vaccines.)

4. **SEROBACTERINS produce a highly efficient and durable immunity.**

The following **SEROBACTERINS** are supplied in the popular Mulford Aseptic Glass Bacterin Syringe, ready for instant use.

Staphylo-Serobacterin. (Sensitized Staphylococcic Vaccine.)

Strepto-Serobacterin Polyvalent. (Sensitized Streptococcic Vaccine.)

Scarlatina Strepto-Serobacterin. (Sensitized Streptococcic Vaccine Scarlatinal.)

Typho-Serobacterin. (Sensitized Typhoid Vaccine.)

Packages of 4 syringes..... $4.00
Single syringes..... 1.50
Each syringe one dose.

For a complete review of the literature on Serobacterins, see Mulford Digest for December.

H. K. MULFORD COMPANY

New York Kansas City PHILADELPHIA Toronto San Francisco
St. Louis New Orleans Chicago Atlanta Seattle Minneapolis
BOSTON DALLAS